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F. J. Sensenbrenner Sees Improvement Ahead

In Annual Report To Stockholders President Sensenbrenner of Kimberly-Clark Corp. Expresses Confidence of Better Business This Year — Company Reduced Bonded Debt $280,000 In 1938 — Other Industrial News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., April 3, 1939—Confidence that business this year will show an improvement over the year 1938 is expressed in the annual report issued to stockholders by F. J. Sensenbrenner, president of the Kimberly-Clark Corporation, Neenah, Wis.

He has the following to say concerning the business outlook for his company:

"A year ago we were in the midst of a serious depression following one of the most drastic and rapid drops in all business of which there is an authentic record. In the Annual Report it was then stated that there was ground for the belief that the business curve was flattening out and that there was hope of better business later in the year. This latter hope was stated to be 'predicated on the assumption that our governmental instrumentalities will recognize that business must be encouraged and not discouraged . . .' The business record of the past year, as well as the figures regarding your corporation's business heretofore detailed, confirms the beliefs then expressed.

Hope in Changed Political Attitude

"During most recent months the signs have multiplied that many of those in high places politically have at last realized the necessity for encouragement to business if answers are to be found for the numerous problems still facing all of us, the solution of which is vital if our country is really to prosper. With the hope that such pronouncements from high places are sincere and will be translated into action, your management is reasonably confident of the future. While the course of prices or operating schedules in the industry is impossible to predict, it is our belief that this year will be better than either 1938 or 1936 as a whole, although it is doubtful that it will reach the results of 1937.

"It is further our belief that our mills are fully maintained and improved each year as is necessary to remain a sound factor in an ever progressive industry. The able efforts of the officers and employees of all departments of the corporation so necessary to the maintenance of this position are reflected in this report and the accompanying statements."

Company Spent $1,347,642 in Improvements

It was previously announced in these columns that the company reported net earnings for the year 1938 at $1,296,861.28, after all charges and preferred dividends, equal to $2.66 per share on common stock outstanding.

During the year the company spent $1,347,642.41 on expansion and improvements. These included a new 189-inch supercalender stack at the Niagara Falls, N. Y. mill, the largest of its kind in operation in this country; a new high pressure boiler and additions and alterations to the boiler plant at the Kimberly, Wis. mill; changes in paper machines at Kimberly to increase capacity, and to improve operations and quality of product; increases in converting machinery at the Lakeview mill at Neenah, Wis., and a substantial addition to the main office building at Neenah.

Further additions and improvements are planned for 1939, and the board of directors has approved a budget aggregating $2,500,000 for this purpose.

Last year the corporation retired $280,000 worth of bonds, leaving its bonded indebtedness December 31, 1938 at $9,720,000. Sinking fund requirements for 1939 call for retirement of $280,000 on June 15 and $280,000 on December 15. The bonds pay 4¼ per cent interest.

Book value of the common stock increased from $55.73 per share in 1937 to $56.51 in 1938. Capital stock and surplus at the end of the year 1938 totalled $37,550,862.34.

Catlin Bill Aids Labor Peace

While the paper and converting industries in Wisconsin have been almost entirely free from strikes, a bill passed last week by the Wisconsin Legislature and signed by Gov. Julius P. Heil removes a future menace. The measure is known as the Catlin bill, and forbids secondary picketing by labor organizations as a means of promoting their unions. It is one of the first pieces of legislation enacted in the wake of the Wagner Labor Relations Act to afford the employer some protection.

Labor disputes are re-defined as being between an employer and a majority of his employees. Heretofore, a dispute could exist through action of two or more employees. The result was the picketing of plants by unions where they had no members among the employees, but used this as a means to persuade non-union plants to organize. This right, under the

(Continued on page 35)

Abitibi Sale to Bondholders Recommended

Reorganization of Abitibi Power & Paper Co. May Not Be Effected For Sometime and Sale and Purchase By Bondholders Is Suggested — New Plan Would Issue 40 Shares of Stock For $1,000 Bond — Other News.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., April 3, 1939—The aspect of affairs in the Abitibi Power and Paper Company, Limited, changes rapidly and a finality may not be reached in the matter of the reorganization for some time. J. P. Ripley, New York, has retired as chairman of the Bondholders' Protective Committee and H. J. Symington, K. C., Montreal, has succeeded him. Milton C. Cross, New York, has also stepped aside and his successor is Rt. Hon. Arthur Meighen, Toronto, who is a former Premier of Canada. Mr. Meighen had previously opposed the Ripley plan. The court has already ruled that the bondholders have first claim on the property. While only 25 per cent of the bondholders are required to deposit their bonds, effort will be made to secure a much larger deposit. The Protective Committee feels there is not at present any equity in the Abitibi Company, for the junior claimants although, it is admitted, that these claimants or any other group may tender a bid for the property in order to end receivership by outright sale.

Purchase by Bondholders Recommended

In a letter sent to the shareholders, accompanying the plan of procedure devised by the committee, H. J. Symington, chairman, says that the bondholders are convinced there are now no means of removing the company from receivership and placing it "effectively capitalized" on a competitive basis within the industry other than by sale and purchase by the bondholders. Many efforts have been with representatives of the junior securities to effect a compromise looking toward the ultimate goal of a sound and constructive reorganization and, after seven years, these efforts have been unsuccessful, says Mr. Symington. He adds that the plan has been discussed with a larger number of institutional holders and they have signified their approval and have or will deposit their bonds with the committee. The plan of procedure has been considered by the Association of Investment Trusts in Great Britain representing British Trust Companies who are bondholders. Interested members of that Association are being recommended to deposit their bonds in support of the plan of procedure.

New Plan Would Issue Stock

The basis of the new plan is 40 shares of new stock for each $1,000 bond, and accrued interest, representing over $68,000,000 in all. It is proposed, after the sale and the bondholders secure the property, to issue 1,930,680 shares of stock, each share represented by a purchase warrant. The price for the stock at the outset works out at $36 a share. The creditors and preferred and common shareholders will be allotted warrants, each warrant carrying the privilege of buying one share of stock on the following basis: At $36 prior to January 1, 1940; at $37 thereafter prior to July 1, 1940; at $38 thereafter prior to January 1, 1941; at $39 thereafter prior to July 1, 1941; at $40 thereafter prior to January 1, 1942; and at $41 thereafter prior to July 1, 1942. At the last date, the warrants, if not exercised, will expire, and the equity of creditors and shareholders would disappear. If at any time within the three years dividends are paid on the stock, the amounts would be distributed pro rata among the bondholders, and be deducted from the price charged for the stock.

It is indicated the 6 per cent preferred shareholders would receive about 72 per cent of the total warrants. This would amount to around 1,390,089, and would entitle the holder of each share of preferred to subscribe for 4 new shares at $36 up to January 1, 1940. The 7 per cent preferred shareholders would receive more, and the creditors, $800,000, a still larger proportion in relation to the obligation to them.

Deducting the 1,390,100 odd warrants to be allotted the 6 per cent shareholders, and with allowance for creditors and 7 per cent shareholders, there could hardly be left more than 400,000 warrants for the common shareholders. As there are 1,088,117 shares of common outstanding, this would suggest not more than 1 warrant for each 2½ shares of common now held.

At the present time, receiver's certificates amount to around $3,600,000. It is hoped that these can be wiped out entirely by the end of 1939 out of cash on hand and the current year's earnings. The new plan provides for an issue of new bonds of not more than $10,000,000, with assenting bondholders given the first right to subscribe. It is understood, however, that the hope is to be able to borrow any new money required from the banks—without any bonds outstanding. The theory of the plan is that today there is left no equity for the shareholders, but that the future may establish some—within the 3-year period covering the lifetime of the warrants.

There is a disadvantage for those who do not deposit their bonds. These bondholders will not rank as holders of the property but only as creditors—to be paid off pro rata to the purchase price of the property.

Ontario Paper Extends Power Contract

To insure themselves of a long term supply of power, the Ontario Paper Company, Limited, Thorold, Int., have completed an extension of their contract with the Ontario Hydro Electric Power Commission. The contract provides for the extension to 1960 of the present contract which would have expired in 1949. The power is used for the generation of steam for the manufacture of the company's products. The company are anxious to extend their plant but before doing so wished to make sure of a long term supply of power.

Paper Men Return From South

Paper men who have been enjoying a winter holi-

day in the south have returned home. S. F. Duncan, president of Provincial Paper, Limited, Toronto, spent several weeks in North Carolina. Harold G. Finlay, vice president of United Paper Mills, Limited, Toronto and Mrs. Finlay were visitors to Bermuda, and Kenneth Walsh, manager of the Hamilton, Ont., branch of the United Paper Mills, and Mrs. Walsh enjoyed a long holiday in California.

Price Fixing in Paper Board Industry

Hon. Norman Rogers, Minister of Labor, has tabled in the House of Commons at Ottawa, a document setting forth two price fixing combines in the Canadian paper board industry. The report is the result of an investigation conducted over several months by F. A. McGregor, commissioner under the Combines Investigation Act. The most complete agreement was found to exist among eighteen manufacturers of corrugated paper boxes organized in a corporate association, Container Materials Limited. The report said that the other combination was Shipping Case Material Manufacturers Association comprising four manufacturers of paper boards used by corrugated box makers. Both associations have their headquarters in Toronto and are managed by Hardy and Badden, a firm which acts in a similar capacity for other trade organizations in Toronto and Montreal. Member firms of the two associations are chiefly in Toronto and Montreal but some are scattered from Coast to Coast. Mr. McGregor reports that it would be difficult to devise a more complete elimination of price competition in any industry than has been achieved through the operations of Container Materials, Limited. The box manufacturers maintained fixed prices and standards of quality and service by agreement for infraction of which fines were assessed against substantial deposits made with the association as a guarantee. Sales in the industry, which totalled $10,893,511 in 1937 (of which $10,876,359 were reported to Container Materials Limited) were placed on a quota basis. When a member sold more than his percentage of total sales he paid a penalty. Similarly he received a cash compensation if his sales fell below his quota. Up to the end of 1937, approximately $500,000 had been paid in and distributed under the quota arrangement. One company paid in $186,000 on that period while another paid $80,000. The quota system did not apply to all manufacturers in the combination. Quota companies made about eighty per cent of the entire Canadian sales. When new competition developed financial or other inducements were offered the new companies to persuade them to conform to the price agreement, with the result that only one company, established in 1938, was not maintaining those prices. The report adds that the industry until recently has operated under a tariff protection which worked out to between forty and fifty per cent. What action if any is taken as a result of the combine commissioner's report is expected to rest with the attorneys general of the provinces.

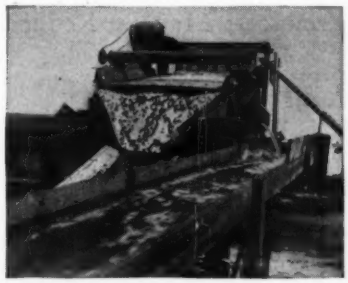
Acme Paper Co. Moves

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., April 3, 1939—Offices of the Acme Paper Company, Inc., here, have been moved from 230-240 West McCarty street to the Indiana Terminal Warehouse building, 31 East Georgia street. L. R. Rosen is president of the company.

Removing Solids from Waste Water

Announcement is made by Link-Belt Company, Philadelphia, Chicago, San Francisco, that in connection with the problem of preventing pollution of adjacent streams, it has developed a mechanical vibrating screen for the efficient removal of solids from factory waste water.



This screen, having a screening surface of 2 x 4 - feet or 4 x 5 - feet, and employing fine-mesh stainless steel screen cloth, has already been thoroughly tried out at several vegetable and citrus fruit canning plants, and at a steel mill for the removal of slag that was light enough to float out into stream adjoining the mill's quench pit.

It is pointed out that this vibrating screen is a compact, self-contained unit, furnished complete with steel collecting tank under screen cloth. The motor is of 1 or 2 hp., depending upon size of screen, and is mounted on top of the screen's steel framework. It is also stated that no spray water is required for washing the particles from screen cloth, the mechanical vibratory action of the screen itself removing them; that the first cost of the installation is low; and that the screen cloth, of minimum size for the work performed, is easily replaced when necessary.

The accompanying illustration shows an installation made at a tomato canning plant. Here the handling capacity is 300 gallons of waste water per minute. The solids are discharged over front edge of screen into a barrel at the rate of about one barrel every 25 minutes. These solids are used as fertilizer. The clarified water passing through the screen cloth to the collecting hopper below, is discharged at side to a flume extending to a lagoon adjoining the stream into which the water finally passes.

Mill at Geduld Starts

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 5, 1939—Production in the South African pulp and paper mill at Geduld is getting underway rapidly, according to an article appearing in the Johannesburg Sunday Times. Most machines already are working and within a month or two the plant will be in a position to operate at full capacity. The mill will produce about 12 tons of wood pulp and some 25 tons of straw pulp daily, to be used in the production of about 40 tons of paper and 5 or 6 tons of paperboard. When plans for the erection of the paper mill first were discussed it was decided to make the plant self-contained and to employ domestic raw materials, as far as possible.

These plans have been carried out and the company is buying all of its basic requirements, with the exception of small quantities of rosin and dyes, within the country.

Canada Aware of Increasing Competition

Increasing Attention Being Paid In Quebec To New Sources of American Newsprint Competition By Mills In Southern States—Dues of Newsprint Producers May Be Reduced—Newsprint Future In Newfoundland.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., April 3, 1939—Increasingly serious attention is being paid here to the new sources of competition beginning to face the newsprint industry and in particular the competition of newsprint manufacture in the Southern States. These new competitive conditions are back of a proposal made in the Quebec Legislative Council for the zoning of forestry areas in the province so that the dues paid by the newsprint companies for cutting pulpwood will not bear so hardly on them where cost of forestry operation is high. The proposal was made by the Hon. John Hall Kelly, who submitted a motion to produce documents on the subject, which motion was carried unanimously.

Hon. John Kelly on Growing Competition

In his address, Mr. Kelly pointed out that newsprint consumers in the United States had complained of a monopoly, and there had been an investigation there as to newsprint companies, with the intention of trying to extend the inquiry into an alleged Canadian monopoly. Consideration, said Mr. Kelly, had to be given the fact that the southern states were concerned with the situation, and only recently there had been established a newsprint mill in Texas at a cost of $6,000,000 which produced newsprint, at a lower cost than the Canadian cost, from southern pine.

What was specially important, Mr. Kelly said, was that the United States Government had contributed $3,000,000 of the money through the Reconstruction Finance Corporation, therefore, it was not a case of one company competing with another, under ordinary conditions, but of one company with state aid competing with another company without state aid.

It was true that this southern pine was not as good as Quebec spruce, Mr. Kelly went on, but the situation had to be taken into account. If prices of newsprint could be made lower than the $50 for Quebec newsprint, following experimenting in the United States, a vital industry in this province would be gravely affected. It had been shown only recently in Pittsburgh that newsprint could be made of waste paper of all kinds, he said, and the experiments had shown the newspaper-consumer could use it to advantage.

American Competition in Kraft and Board

Speaking at the annual meeting of the Bathurst Power and Paper Company, Limited, R. L. Weldon, president, explained that one of the causes of a substantial drop in profits in the past year had been increased competition as a result of the new trade agreement between Canada and the United States. He said:

"The major outlet in the domestic market for the company's Kraft and Box Board products is through manufacturers of shipping cases, folding and set-up boxes. The drastic price reductions which took place in these industries in the United States during the present year have increased importations of these products, making profitable trading conditions difficult for both board mills and box manufacturers. This condition has been seriously aggravated by the provisions of the new trade agreement with the United States, under which the tariff on the products of both the Company and its customers has been substantially reduced. Adequate support by the Government for growing industries, indigenous to this country, is essential if such industries are to make progress.

"The new trade agreement, which came into operation on January 1, 1939, has the effect of reducing the tariff protection of these industries for the second time in three years. Further, it has removed the tariff on all grades of wood pulp entirely. The economic welfare of the pulp and paper industry and allied industries, constituting as they do, the largest employers of labor in Canada, is a matter of grave concern to the industries themselves, and should be to the people and government of this country. The restoration of profitable operations to these industries, as a whole, is essential and would materially alleviate unemployment."

Newsprint Outlook Better in Newfoundland

Sir Thomas Inskip, Secretary for the Dominions in the British Government, replying to questions in the House of Commons in London last Wednesday in respect to unemployment in Newfoundland, detailed measures taken by the Commission of Government in Newfoundland in the matter of relief works. He added:

"It was not possible, however, by Government action to offset in full the shortage of employment in the newsprint and logging industries and there has, I regret to say, been an increase in the number of persons in receipt of public relief during the winter as compared with the winter of 1937-38.

"There has recently been some improvement in conditions in the newsprint industry and therefore in the prospects for resumption of logging operations on a larger scale.

"A further impetus will be given to logging activities by the recent agreement with Messrs. Bowater Lloyd, providing for utilization of important forest areas hitherto unexploited."

Readjustment of Cutting Charges Favored

If there were to be lower prices established by United States competition, say at $35 and $40 a ton, and always not higher than the Canadian price, it would mean that the hold of Canadian manufacturers on the American market would be broken, Mr. Kelly feared. Much better to readjust charges on wood cut on Crown lands, and preserve the farmers, colonists, and workmen in the village from going on the dole, he said. It was no longer possible for Quebec to say it would have the price it wished, for the days of $100 per ton newsprint were over.

Financial News of Pulp and Paper Industry

Plans To Resume Operation of Dexter Mills — Net Profit Reported By Masonite — Brown Company Shows Loss — Decreased Net Income For Nekoosa-Edwards—British Columbia Pulp and Paper Co. Reports Loss.

High, Low and Last for the Week Ending April 5, 1939

	High	Low	Last
Armstrong Cork Co.	41¼	36¼	38⅜
Celotex Corp.	15¼	11¼	12⅞
Celotex Corp., pf.	70½	69	69
Certain-Teed Products Corp.	9⅜	7⅛	8¼
Certain-Teed Products Corp., pf.	39½	31	33
Champion Paper & Fibre Co.	24½	20⅞	21
Champion Paper & Fibre Co., pf.	102	101½	102
Congoleum-Nairn Co.	24¼	20⅛	21
Container Corp. of America	13⅛	10⅛	10¾
Continental-Diamond Fibre Co.	7¼	5⅞	6
Crown-Zellerbach Co.	11⅜	10	10¼
Crown-Zellerbach Co., pf.	85¼	82	82
Flintkote Co.	24¼	19⅛	21
Robert Gair	3⅛	2⅝	2⅞
Robert Gair, pf.	10⅞	9⅜	9½
International Paper & Power	10½	8	8¾
International Paper & Power, pf.	38	31¼	32⅝
Johns-Manville Corp.	78	69½	72
Johns-Manville Corp., pf.	126	125⅜	126
Kimberly-Clark Corp.	22½	22	22
MacAndrews & Forbes	29	29	29
MacAndrews & Forbes, pf.	130½	130½	130½
Masonite Corp.	47	40	42
Mead Corp.	10⅛	8¾	9
Mead Corp., pf.	66¼	66⅛	66⅛
Paraffine Companies, Inc.	50	45	45
Paraffine Compaines, Inc., pf.	102	102	102
Rubberoid Co.	24	21⅛	21⅛
Scott Paper Co.	48¾	47	47½
Scott Paper Co., pf.	116½	116½	116½
Sutherland Paper Co.	29	26	26
Union Bag & Paper Corp.	10⅛	7¾	8½
United Paperboard Co.	5¼	4½	4⅞
U. S. Gypsum Co.	93¼	78	83
U. S. Gypsum Co., pf.	170	170	170

NEW YORK CURB EXCHANGE

High, Low and Last for the Week Ending April 5, 1939

	High	Low	Last
American Box Board Co.	7	6⅛	6⅛
Brown Co., pf.	12½	7¼	9
Great Northern Paper	37½	36	36
St. Regis Paper Co.	2¼	2	2⅛
St. Regis Paper Co., pf.	41	41	41
Taggart Corp.	3¼	3	3¼

Make Plans For Starting Dexter Mill

[FROM OUR REGULAR CORRESPONDENT]

DEXTER, N. Y., April 3, 1939—Plans are progressing for a resumption of operations at the Dexter Sulphite Pulp and Paper Company and during the past week Winfield E. McIntyre, head of the Fayetteville mill of the McIntyre Paper Company, arrived here for a conference with Brayton C. Foster, both recently being appointed equity receivers. Attorney Raymond Cornwall, counsel to the first mortgage holder, the Reconstruction Finance Corporation, is also taking an active part in preparations for reopening the mill. It was stated by Mr. Cornwall that resumption of operations would begin in about two weeks although there was much to be done to get the machinery connected up and back in operating condition, following the partial dismantling by the company when liquidation was planned. Mr. McIntyre is well known to the paper industry of this section. At one time he was a machine tender at the Deferiet mill of the St. Regis Paper Company and later he became a salesman for the Treadwell Paper Company, of Watertown. Upon relinquishing his connections with the latter concern he went to New York City to take a position as salesman for Coy, Hunt & Co. After a short time with that concern he purchased the mill at Fayetteville, placed it in good condition and began the manufacture of tissue papers. This venture has been a decided success from the start of operations. Bernard A. Gray, president of the concern as well as the Northern New York Trust Company, $70,000 creditor; Henry H. Babcock, vice president of the Watertown National Bank, $36,000 creditor, and August F. Richter, paper mill consultant, were among those that went to Washington with Attorney Cornwall to attend the conference with the Reconstruction Corporation at which it was decided to continue operations. Attorney Cornwall is optimistic over ability to reorganize and continue business on a profitable basis. The Reconstruction Finance Corporation holds a $350,000 first mortgage on the property.

Masonite Reports $442,923

The Masonite Corporation reports as follows for the twenty-eight weeks to March 11: Net profit, $442,923, equal after dividend requirements on 5 per cent preferred stock to 72 cents a share on 539,210 common shares. In the corresponding period of the previous year the net was $551,938, or 93 cents a share on 536,740 common shares. For the twelve weeks to March 11 net profit was $223,411, or 37 cents a share, against $212,091, or 35 cents a share for the twelve weeks to March 12, 1938. Net sales for the twenty-eight weeks increased 2.9 per cent to $3,278,807 from $3,185,909 in the twenty-eight weeks ended on March 12, 1938.

Brown Co. Shows Net Loss

A net loss of $3,825,458 for 1938, after allowing for depreciation and deferred bond interest payments, was shown last week in the consolidated financial statement of the Brown Company, $42,000,000 pulp and paper concern, and its subsidiaries.

The loss contrasted with a profit of $44,249, calculated on the same basis, in the previous year. Before allowing for depreciation and deferred interest payments the consolidated loss was $878,031, against a gain of $2,947,106 for 1937.

Nekoosa-Edwards Net Declines

[FROM OUR REGULAR CORRESPONDENT]

NEKOOSA, Wis., April 3, 1939—Net income of the Nekoosa-Edwards Paper Company decreased $151,721 from 1937 to 1938, according to reports issued last week. Earnings last year were $22,920, as compared with $174,641 for 1937.

British Columbia Reports $836,630 Loss

The British Columbia Pulp and Paper Company, Ltd., reports as follows for 1938: Net loss, $836,630, compared with 1937 net income of $225,011 or $1.86 each on 100,000 common shares after dividend requirements on preferred.

Steam Booster Compressors*

By W. E. Anderson [1]

Compressing steam would be uneconomical, if the comparison is made only on the basis of the cost of the heat units applied. You could hardly attempt a comparison with coal at $3.00 a ton, containing 10,000 to 12,000 B.t.u. per lb., as against electric energy to drive a steam booster compressor at say 2 cents per kw.-hr., equivalent to 3412 B.t.u.

However, the rapid development of many of our industries has created new conditions, involving many new problems, rendering inadequate existing production equipment. One of these problems—that of supplying relatively small quantities of steam at higher pressure than is available from any particular set of steam generating equipment—has been solved by the steam booster compressor.

Although the compressing of steam is relatively new in this country, the process is not new in Europe. You may have read in the October 1937 issue of Heating and Ventilating, an article describing a turbo-steam compressing plant at Braunschweig, Germany, designed to compress steam from intake pressures of 29 to 59 lb. per sq. in. absolute to final pressures of 36 to 78 lb. This unit had a capacity of 10 tons of steam per hour and operated at controlled speeds of from 8000 to 12,000 r.p.m.

Compressed Steam and Compressed Air

I think you will grant that the compressing of steam is much more efficient than the compressing of any other gas. Let us take for illustration the compressing of air—this can hardly be called efficient, when you consider that all of the heat of compression is dissipated. Whereas, in the compression of steam the objective is to retain all of the heat of compression, as heat is the form of energy that we would attempt to secure.

The principles employed in the compressing of steam are similar to those used in the compressing of other gases, except that due consideration has to be given to the ratio of specific heats.

You must also take into consideration that a properly designed steam booster compressor will more nearly approach the adiabatic curve than a properly designed air compressor, for the reason that the compressing efficiency will depend upon the degree of retention of the heat of compression.

It is a well known fact that the ratio of specific heats of steam will vary depending upon temperature, pressure and quality.

Authorities disagree in the matter of specific heats of steam. For instance, some authorities state, referring to Rankin's experiment, that he found the adiabatic might be represented approximately by the expression of $PV^{\frac{10}{9}} = \text{constant}$. Other authorities refer to Zeuner's experiments which showed that an exponential equation might be written in the value of $PV^n = \text{constant}$. He represented the value of n or the ratio of specific heats as $1.035 + 0.100X$ where X denoted the steam quality.

Another authority states, "There is seldom any good reason for the use of exponential formulas for steam adiabatics." I disagree with this statement in view of the changed conditions requiring applications of steam booster compressors.

In order to have a reasonable factor of safety relative to the power involved, we used a ratio of specific heats for such conditions as we have encountered of 1.298, and this is based on Regnault's constant value of 0.4805 for the specific heat at constant pressure. The ratio of specific heats of 1.298 for the compressing of steam is comparable with the ratio of specific heats of 1.408 for the compression of air.

Quality of the Steam

The quality of steam is an important consideration for the reason that the quality of the steam at the intake to the steam booster compressor is a factor upon which the final condition depends. While the ratio of compression will also govern the final conditions, it is possible that the quality of steam at the compressor intake will determine whether the final steam condition will be in the superheated state, the dry saturated state or have a quality less than unity. If the steam at the compressor intake has a quality of less than unity, some of the heat of compression will be used for evaporative purposes; if the steam is initially dry at the compressor intake, the steam at the end of the compressing stroke will be superheated.

It cannot be overlooked that in the compressing of steam you are already dealing with a vapor which contains (in a more or less degree depending upon its quality) some latent heat of vaporization, which in all cases is the greater part of the total heat energy.

What you are really doing is taking a medium which already exists, and which cannot be used to advantage and by adding a small amount of energy to this medium, converting it to a condition suitable for a specific purpose.

Let us take a case where steam in the dry saturated state at atmospheric pressure may be available

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* Presented at the meeting of the Empire State Section of the Technical Association of the Pulp and Paper Industry, Syracuse, N. Y., November 19, 1938.

[1] Pennsylvania Pump and Compressor Co., Easton, Pa.

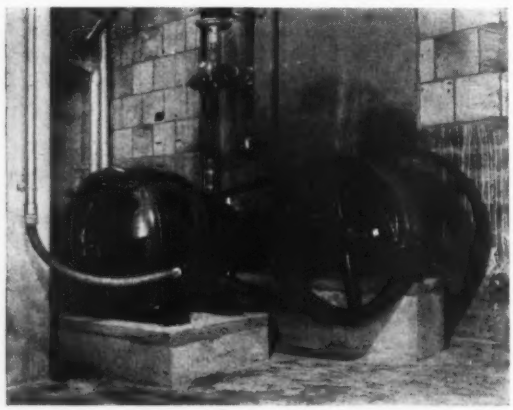


FIG. 1.

Steam Booster Compressor Manufactured by Pennsylvania Pump and Compressor Company and operated by 50 h.p. a.c. motor. One hundred pounds steam is available at intake of compressor and is delivered at 250 pounds pressure to heat exchanger shown in Fig. 2.

but cannot serve any useful purpose. There is a demand, however, for steam at say 30 lb. gauge and under these later conditions all of the latent heat of vaporization could be utilized.

Most steam tables show—dry saturated steam at atmospheric pressure contains 970.4 B.t.u. latent heat of vaporization. Compressing from atmospheric pressure to 30 lb. gauge will mean a compression ratio of 3.04. The theoretical adiabatic horsepower under these conditions, i.e., compressing 1000 lb. per hour of dry saturated steam from atmospheric pressure to 30 lb. gauge, will be 36.1; the theoretical temperature would be 406 deg. F. equivalent to 132 deg. superheat. Assuming rational values for mechanical efficiency and compression efficiency, the brake horsepower required at the compressor shaft would be 45. The actual total temperature would be in the neighborhood of 319 deg. F. or about 45 deg. superheat. This superheat could easily be dissipated, as it represents approximately only 21 B.t.u. above the dry saturated condition.

By this process, mechanical energy equivalent to 114 B.t.u. per lb. has been added.

If all the superheat, which might have been generated during compression, had been dissipated there would still be available 928.6 B.t.u. per lb., which is the latent heat of vaporization of dry saturated steam at 30 lb. gauge.

In this case, you have taken something of no practical value and by the use of mechanical energy have made available 928.6 B.t.u. per lb. of steam by the application of energy equivalent to 114 B.t.u. per lb. of steam, or the heat energy available is approximately eight times the energy applied.

There are a number of steam booster compressors used for a variety of applications. These compressors have been of the single cylinder, single stage, double acting, horizontal type, and the conditions of service have varied in capacity from approximately 150 to 1600 lb. of steam per hour and the pressure conditions from 6 lb. intake to 100 lb. discharge, up to 400 lb. intake and 675 lb. discharge (all gauge).

The construction employed in these steam booster compressors is similar to that used for the compressing of air, except that in all cases the steam cylinder is properly lagged to reduce radiation losses. The compressing cylinder is self-scavenging by arranging the intake at the top of the cylinder and the discharge at the bottom. Metallic packing is furnished as standard in the cylinder stuffing box and a special extra long distance piece is provided between the cylinder and the frame so as to prevent condensate in the compressor frame.

Most of the compressors furnished have been supplied with some form of regulation for continuous operation, and we employ two methods. Both methods are of the two-step type, i.e., either all on or all off, which means fully loaded or unloaded. These types of regulation can be either the by-pass or the lifting inlet valve unloader type.

By-pass type of regulation for continuous operation consists of necessary by-pass piping connecting discharge and intake of the compressor and in this piping is installed a pressure governor. This pressure governor is of the conventional type, designed to control and maintain constant steam pressures, similar to that manufactured by either Fisher or Foster.

Lifting inlet valve unloader type of regulation for continuous operating consists of lifting inlet valve unloaders in the compressing cylinder, with a three-way solenoid operated valve arranged to control the admission and exhausting of steam to these inlet valve unloaders; this solenoid operated valve is controlled in turn by a gauge type pressure regulator set for the unloading and reloading discharge pressures. This three-way solenoid operated valve is similar to the General Electric CR-9507 diaphragm type, pilot operated, solenoid valve and the gauge type pressure regulator is similar to the General Electric CR-2922.

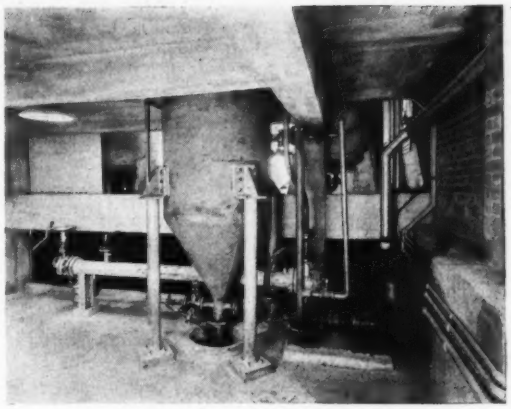


FIG. 2.

Sixty-five cubic foot Stainless Steel Digester equipped with Fiber Making Processes circulating and heating system. Steam at 250 pounds pressure is delivered by steam booster compressor to heat exchanger shown as horizontal pipe at bottom and in the rear of digester. Circulating pump and piping system shown at left.

Wide Range of Applications

The plastics industry is one in which progress has been extremely rapid. The use of new plastics requiring new equipment created a number of cases where it was found that existing steam conditions were not suitable for obtaining the proper temperature for the platens. At Fort Wayne, Ind., a plastic manufacturer has a 7 x 7 steam booster compressor for just this kind of service, and the unit delivers 1575 lb. of steam per hour compressing from 125 to 175 lb. gauge.

Several units have been furnished for installation in laundries, in cities where low pressure steam is available for purchase and generally used only for heating service. One of these installations is at Detroit, Mich., where a 6 x 7 steam booster compressor handles 225 to 428 lb. of steam per hour with the intake pressure varying from 10 to 30 lb., and the discharge pressure 75 lb. gauge. This compressor furnishes steam for the operation of Hoffman presses for the heating of padded press heads, to dampen and indirectly dry the garments being pressed. From a Detroit Edison report, the conclusion is drawn from their study that this steam booster compressor installation is cheaper and more satisfactory than a boiler installation despite the fact that the compressor was designed for twice as many presses as were installed and does not operate as economically as if it were fully loaded. You may be interested in some additional information from this report, and I quote—"the total cost of this steam booster installation was $3224.00; this includes first cost of the compressor with all the accessories, labor, piping, etc. The estimated cost for installing gas

fired boilers with accessories having the same capacity as the compressor was $2690.00. The annual fixed charges on the steam booster compressor installation was $354.60 as against $400.90 estimated for the gas fired boiler installation. The annual operating expense on the steam booster compressor was $1082.27 against an estimated annual operating expense of gas fired boilers of $1294.68.

In reference to the compressor in the New York State College of Foresty Laboratory at Syracuse I quote from Prof. Libby's letter to us of July 20, 1936—"We have a problem in our experimental pulp and paper laboratory now being installed, in which the question of obtaining steam pressures up to 200 and 300 lb. has been giving us considerable trouble. We have 100 lb. steam available in these laboratories, but for experimental work it is sometimes necessary to use pressures considerably in excess of this figure."

The compressor installed at Syracuse is a 7½ x 9 and it can handle, when operated at a speed of 300 r.p.m., 1370 lb. of steam per hour from 100 lb. to 250 lb. gauge, and under these conditions will require 52 b.h.p. at the compressor shaft.

The economy of the installation depends upon local conditions, i.e., local conditions may determine whether it is impracticable or whether it will mean real savings. Steam booster compressors are not costly, they are easily installed and require very little maintenance.

There are many conditions where the use of a steam booster compressor is not only expedient but advantageous where the quantity of steam required at the higher pressure and temperature is insufficient to justify changes or additions to existing boiler equipment.

Robertson Holds Industrial Party

The Robertson Paper Box Company, Montville, Conn., held its annual Industrial Party at the Y. M. C. A., New London, Conn., March 18 and the affair was, as usual, a very great success. Many different events were scheduled and appropriate prizes awarded to the winners. The box shop defeated the paper mill in indoor baseball competition by a score of 17 to 11. The women's indoor baseball contest between the married and single women, resulted in a victory for the latter by a score of 20 to 9. A tumbling and Indian Club exhibition was ably staged during the program by the junior and midget leaders of the Y. M. C. A.

Sues For Paper Container Permit

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., April 3, 1939—A third suit has been filed in the Federal District Court, Chicago, asking that the city and board of health officials be compelled to permit the use of paper containers for milk. The Ex-Cell-O Corporation of Detroit, which licenses the use of paper containers, filed the suit. The bill of complaint follows closely the charges contained in similar suits of the Fieldcrest Dairies, Inc., and the American Can Company now on file in the court. The bill adds that paper containers were approved by Dr. Lloyd Arnold, professor of bacteriology at the University of Illinois, in a study made before his recent appointment to the board of health.

Paper Men Plan Annual Dinner

PHILADELPHIA, Pa., April 3, 1939—One of the big events of the year for the members of the Philadelphia Paper & Cordage Association is the annual shad dinner which will be held at Kugler's Restaurant on Friday evening, April 14th at six o'clock. This is one of the outstanding parties given by the Association and is always well attended by both members of the Association and their friends.

One of the attractive features of this dinner will be the presentation of a real motion picture, whose title is "The Island of Pearl", and which Harry S. Platt, of Denny Tag Company, says is a fascinating and educational picture, not available for regular commercial showings. The scene is laid on the Island of Labrador, and the picture depicts the native customs as well as unusual marine scenes and activities. In addition to the moving picture, there will be the usual or should we say the "unusual" in entertainment for which this Association is noted, which, combined with an elaborate musical program, will round out the evening. Leonard Fitzgerald, in his inimitable way, will render some of his always popular recitations and readings, and there will also be informal contributions by some of the members. President Jack Howarth and Entertainment Chairman E. K. Lay who can always be depended upon for the unusual in entertainment, are very busy working on the dinner program.

Plans for Mumford Removal

The Mumford Paper Mills, Inc., Mumford, N. Y., has sent the following announcement to the trade:—"This is to advise our customers of the proposed change in operations which will bring about the discontinuance of our mill here at Mumford within the next few months.

"Negotiations have been completed with a recently organized company, Southern Tissue Mills, Inc., to take over the manufacturing equipment here at Mumford for establishing a mill at Rockingham, N. C. The new mill will be under the same management and will continue to manufacture the same lines of papers as produced here at Mumford. In order to facilitate this change-over and to take care of our regular customers during the interval our paper machine will be out of production, arrangements are being made to continue the converting operations here at Mumford right up until the time the new mill is ready to go into production around July 1st. In this way we hope to take care of our regular customers without any particular inconvenience on their part because of a lapse in shipments.

"The new mill is being engineered and new equipment installed to increase production, decrease costs and improve the quality of the papers. The Mumford Paper Mills, Inc., is to be liquidated. All brand names, trademarks, etc., have been assigned to the new company."

Southeastern Paper Men Elect Officers

The Southeastern Paper Trade Association at its recent convention in the King Cotton Hotel, Greensboro, N. C., elected the following officers: J. L. Buchanan, Richmond, Va., president; Hugh Boyer, Charlotte, vice president; Larry Widman, Asheville, secretary, and W. D. Cole, Richmond, Va., treasurer.

Census of Converted Paper Products

Manufacturers of converted paper products reported a moderate increase in employment and considerable increases in wages and value of products for 1937 as compared with 1935, according to preliminary figures compiled from returns of the recent Biennial Census of Manufacturers just released by Director William L. Austin, Bureau of the Census, Department of Commerce.

The number of wage earners employed in these industries in 1937 was 126,652, an increase of 16.5 per cent over 108,694 reported for 1935, while their wages increased 28.9 per cent, from $102,123,007 in 1935 to $131,619,429 in 1937. The value of products increased 32.8 per cent from ..644,184,880 to $855,-717,036.

Statistics for 1937, with comparative figures for 1935 and 1933, are given in the following tables which supplement the reports issued for the individual industries published from June 15 to December 22, 1938. All figures for 1937 are preliminary and subject to revision.

TABLE 1.—SUMMARY FOR THE CONVERTED PAPER PRODUCTS INDUSTRIES *—1937, 1935 AND 1933

(Because they account for a negligible portion of the national output, plants with annual production valued at less than $5,000 have been excluded since 1919.)

	1937	1935	1933	Per cent of increase 1935-1937	Per cent of increase 1933-1937
Number of establishments	2,212	2,166	1,916	2.1	15.4
Wage earners (average for the year)[1]	126,652	108,694	89,082	16.5	42.2
Wages[2]	$131,619,429	$102,123,007	$73,647,958	28.9	78.7
Cost of materials, fuel, and purchased electric energy[3]	$487,052,827	$360,430,603	$260,983,517	35.1	86.6
Value of products[3]	$855,717,036	$644,184,880	$477,088,593	32.8	79.4
Value added by manufacture[3]	$368,664,209	$283,754,277	$216,105,076	29.9	70.6

* Comprising establishments classified in the following industries: Bags, paper, exclusive of those made in paper mills; Boxes, paper, not elsewhere classified; Cardboard, not made in paper mills; Card cutting and designing; Envelopes; Paper goods not elsewhere classified; and Wall paper.

[1] Not including salaried officers and employees. Data for such officers and employees will be included in a later report. The item for wage earners is an average of the numbers reported for the several months of the year. In calculating it, equal weight must be given to full-time and part-time wage earners (not reported separately by the manufacturers), and for this reason it exceeds the number that would have been required to perform the work done in the industry if all wage earners had been continuously employed throughout the year. The quotient obtained by dividing the amount of wages by the average number of wage earners cannot, therefore, be accepted as representing the average wage received by full-time wage earners. In making comparisons between the figures for 1937 and those for earlier years, the possibility that the proportion of part-time employment varied from year to year should be taken into account.

[2] Profits or losses cannot be calculated from the Census figures because no data are collected for certain expense items, such as interest, rent, depreciation, taxes, insurance, and advertising.

[3] Value of products less cost of materials, fuel, and purchased electric energy.

TABLE 2.—CONVERTED PAPER PRODUCTS—PRODUCTION, BY KIND AND VALUE—1937, 1935 AND 1933

Kind	1937	1935	1933
1. Converted Paper Products industries, all products, total value	$855,717,036	$644,184,880	$477,088,893
2. Converted paper products	835,276,461	630,760,647	465,494,407
3. Other products (not classified in these industries)	19,084,925	12,301,960	11,287,957
4. Receipts for custom work	1,355,650	1,122,273	306,229
5. Converted paper products made as secondary products in other industries	162,804,516	131,574,533	111,719,089
Converted paper products, aggregate value (sum of 2 and 5)	998,080,977	762,335,180	577,213,496
Bags, total[1]	97,483,720	75,159,648	57,375,490
Kraft	79,061,203	53,300,464	44,044,395
Glassine	5,628,499	5,332,947	
Other paper	12,794,018	16,526,237	13,331,095
Bottle caps	8,919,446	7,386,945	6,373,093
Boxes and containers (paper and paperboard), total	442,345,944	325,083,346	253,557,485
Shipping containers, corrugated	191,757,522	134,936,822	
Shipping containers, solid-fiber	29,262,396	25,437,106	
Cartons and folding boxes	119,062,925	85,347,060	
Set-up paper boxes	77,945,275	62,556,184	[2]
Paper cans and bottles	17,764,951	9,681,773	
Decorated and lithographed, lacquered, and fancy-covered boxes	2,836,922	2,317,454	
Other boxes and containers	3,715,953	4,806,947	
Cards cut and designed, total	20,528,275	18,738,666	10,967,448
Index, library, etc., cards, plain	5,275,523	2,455,978	
Jacquard cards for textile-fabric machines	287,270	227,042	[2]
Photograph mats, mounts, folders, etc.	3,017,034	2,468,620	
Other	11,948,448	[3] 13,587,026	
Cardboard (converted)	7,269,946	6,132,279	4,869,786
Coated book paper	43,731,242	32,921,486	22,990,863
Crepe paper	3,174,623	3,437,721	1,659,899
Cups, total	13,641,932	10,607,895	10,321,080
Flat	2,239,981	876,354	
Round	11,401,951	9,731,541	[2]
Dishes, spoons, etc.	3,040,637	2,895,985	1,944,371
Envelopes	48,523,793	42,054,338	33,092,998
Glazed and fancy paper	9,093,935	7,701,922	6,127,245
Gummed paper and tape, total	16,990,124	11,606,224	9,686,858
Gummed flat paper	4,657,015	2,839,760	
Gummed paper tape	7,856,398	5,060,637	[2]
Gummed cloth tape	4,476,711	3,705,827	
Lace, paper	2,325,599	1,830,568	1,547,753
Napkins, paper	11,029,608	8,086,723	6,524,162
Papeteries (including other stationery), total	9,862,232	9,175,856	5,918,480
Unprinted	6,718,169		
Printed	3,144,063	[4]	[4]
Rolls (for adding machines, telegraph tape, etc.)	3,188,022	1,809,481	1,348,425
Tablets, total	10,224,286	10,179,914	10,842,694
Book	1,659,949	756,991	
News	2,270,313	2,002,039	
Writing	5,574,529	4,142,288	[2]
Other	719,495	3,278,596	
Toilet paper	35,263,062	27,408,188	24,287,172
Towels	12,141,940	9,490,203	6,598,095
Tubes and cores (paperboard)	6,407,833	4,903,707	4,606,979
Wall paper[5]	26,771,546	19,494,600	15,794,369
Waterproof wrapping paper	5,427,772	3,495,817	1,883,415
Waxed paper	53,394,544	41,158,458	30,640,586
Cloth-lined paper	560,833	231,424	
Coin wrappers	528,968	348,109	
Egg-case fillers and flats	1,917,122	1,783,566	
Facial tissue and handkerchiefs	8,776,078	[6] 4,680,994	
File folders	1,402,547	1,039,531	48,254,750
Patterns, unprinted[7]	4,427,485	4,448,535	
Tags (paperboard), unprinted	1,695,590	1,680,749	
Other converted paper and paperboard products[8]	87,992,293	67,362,302	

[2] In addition, bags are made to some extent of transparent sheets of plastic materials (cellulose, etc.) which are classified as products of the "Synthetic-Resin, Cellulose-Plastic, Vulcanized Fiber, and Molded and Pressed Pulp Fabricated Articles Not Elsewhere Classified" industry. Complete data not available.

[2] No data.

[3] Includes stencil cards for addressing machines.

[4] Not shown separately in order to avoid disclosing data for individual establishments.

[5] Number of rolls: 1937, 411,186,355; 1935, 344,496,067; 1933, 289,120,472.

[6] Facial tissue only.

[7] For data on printed and lithographed paper patterns, see report on Printing and Publishing Industries.

[8] Cigarette paper, playing cards, and confetti, for all years; in addition, miscellaneous products (not reported by kind) and twisted paper (cord, twine, etc.) for 1933.

Argentina's Newsprint Imports

Imports of newsprint into Argentina during 1938 reached a total of 126,592 metric tons, according to a report just received from the office of the American Commercial Attache in Buenos Aires. Finland supplied 44,832 metric tons, or more than ⅓ of the total imports. Next in order of importance were Canada, which supplied 36,151 tons; Norway, which supplied 20,038 tons, and Sweden supplying 17,173 tons. The remainder came largely from Germany.

Picturing Performance

at McEWAN BROTHERS, INC

Today, as it has for over 100 years, the name McEwan identifies an outstanding leader in the paper making field. But it is the day-to-day quality of McEwan products rather than their four-generation history that earns this enviable reputation.

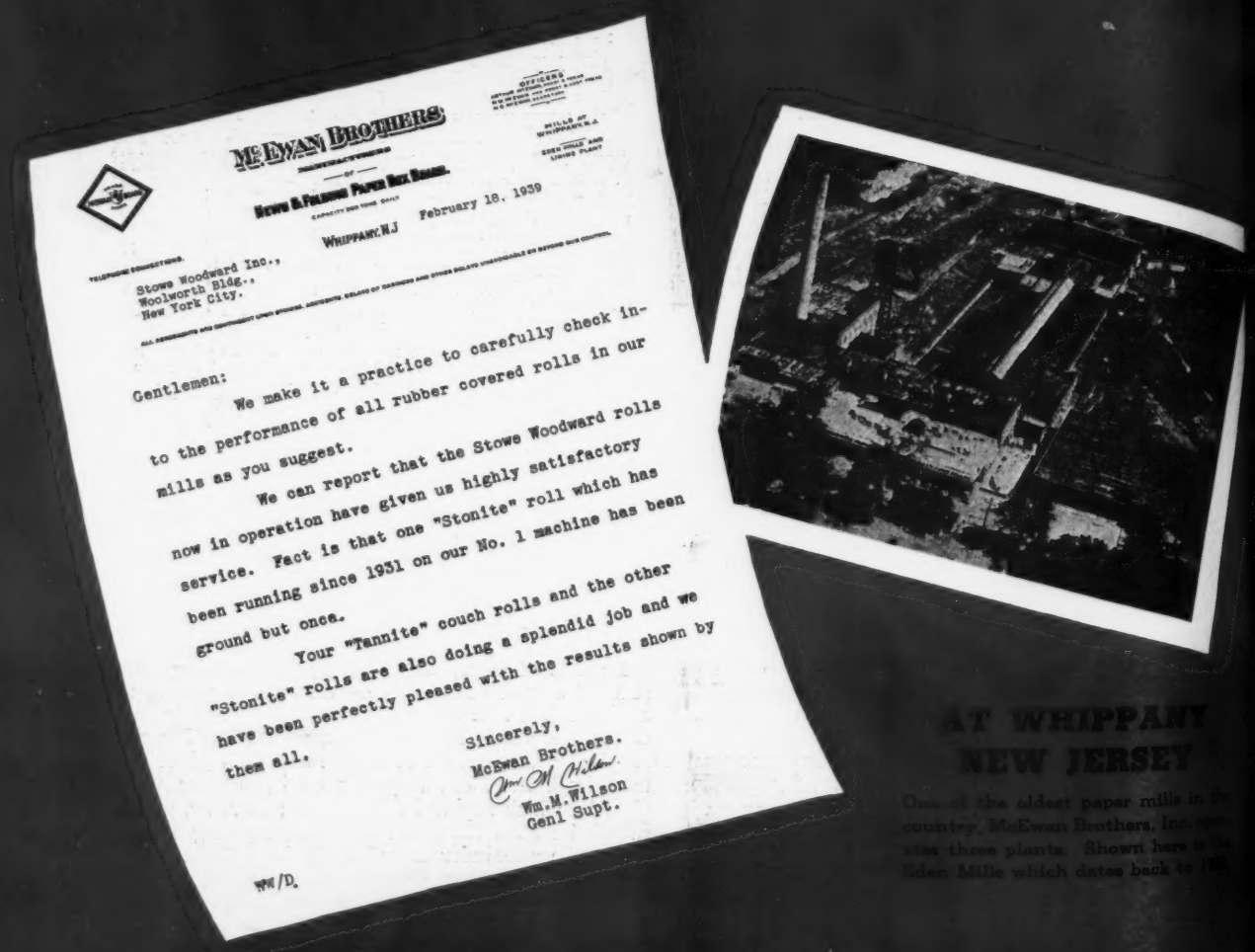
Similarly, we at Stowe-Woodward can point to three generations of specialized and experience and to unsurpassed manufacturing facilities. Yet it is the year-in and year-out performance of Stowe-Woodward rubber covered rolls that make them standard equipment in the leading paper mills.

STOWE—WOODWARD, INC.

NEWTON UPPER FALLS • MASSACHUSETTS

NEW YORK OFFICE • WOOLWORTH BUILDING

Stowe-Woodward Rolls are made on the West Coast by HUNTINGTON RUBBER MILLS, INC., 35 West Lander St., Seattle, Wash.



McEWAN BROTHERS

Stowe & Fullerton Paper Box Boards

WHIPPANY, N.J. February 16, 1939

Stowe Woodward Inc.,
Woolworth Bldg.,
New York City.

Gentlemen:

We make it a practice to carefully check into the performance of all rubber covered rolls in our mills as you suggest.

We can report that the Stowe Woodward rolls now in operation have given us highly satisfactory service. Fact is that one "Stonite" roll which has been running since 1931 on our No. 1 machine has been ground but once.

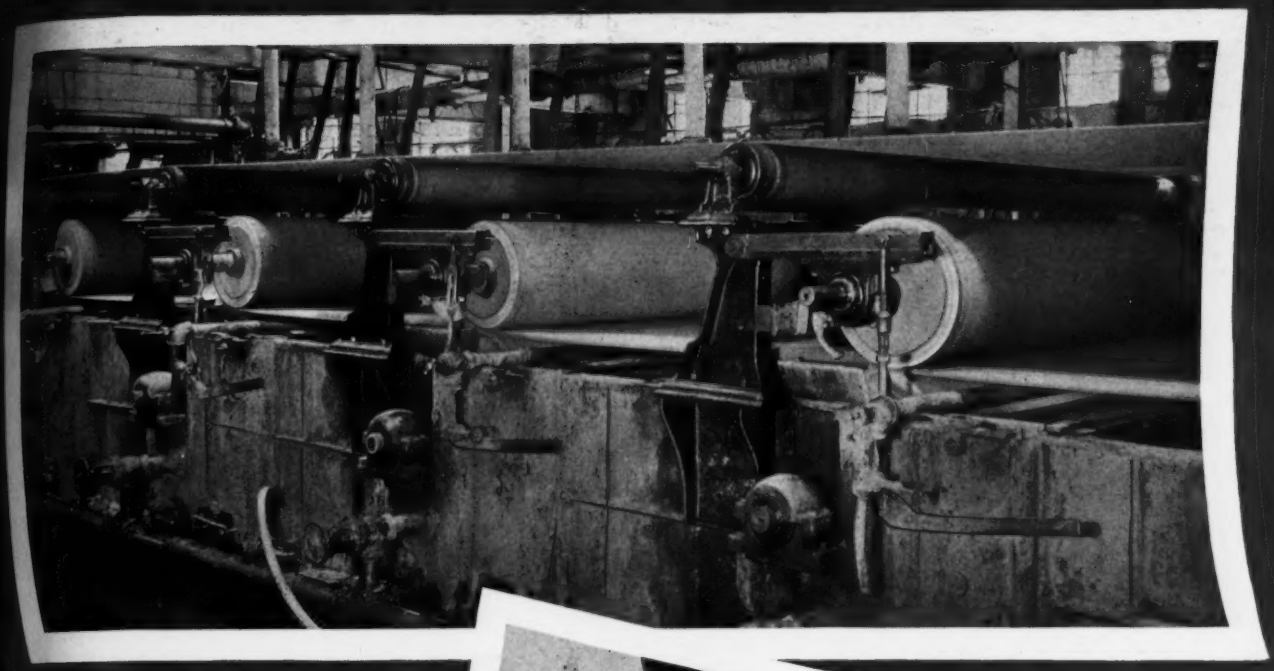
Your "Tannite" couch rolls and the other "Stonite" rolls are also doing a splendid job and we have been perfectly pleased with the results shown by them all.

Sincerely,
McEwan Brothers.
Wm. M. Wilson
Wm. M. Wilson
Genl Supt.

WW/D.

AT WHIPPANY NEW JERSEY

One of the oldest paper mills in the country, McEwan Brothers, Inc. operates three plants. Shown here is the Eden Mills which dates back to 1[illegible]



ON THE CYLINDERS

...as four of the eight 21" x 150" ...NITE Couch Rolls on the McEwan ...o. 1 machine. Seven 19" x 116" ...NITES equip the slightly smaller ... machine. The exclusive TAN- ...process blends extreme resilience ...wing toughness — a combina- ...that means long life and perfect ...mance at low cost.

ON THE PRESSES

...up of a STONITE in top second ...position, No. 1 machine. An- ...NITE in reverse press, came ...has been on this job since ...ber 1951, has rendered highly ...ctory performance with only ...ning. Patented STONITE Top ...Smoothing rolls offer paper ...improved finish, less pick-up, ...breaks, protection against ...ning, dipping or doctor scoring.

MAKE THIS TEST

Select your rolls by the A P* Test. We gladly furnish free Roll Service Record Books in which you can easily keep accurate track of rubber roll cost and performance. Write for a supply.

*Actual Performance.

STONITE • TANNITE • WHITE STAR

Top Press and Smoothing Rolls

Couch and Lump-breaker (Pressure) Rolls

Rubber Covered Rolls for every requirement

ALL MADE BY THE **COREWELD** PROCESS

Obituary

Bartow Crocker

[FROM OUR REGULAR CORRESPONDENT]

FITCHBURGH, Mass., March 27, 1939—Bartow Crocker, vice president of one of the Crocker, Burbank & Co., association until his retirement four years ago, died of a cerebral hemorrhage last night at his home, here. He was 52.

A member of an old Massachusetts family, Mr. Crocker was forced to retire from the Crocker, Burbank & Co. Association, because of ill health. He has been a member of the firm since 1915. Mr. Crocker continued to serve on the mill's board of trustees after his retirement.

He was also a trustee of the Fitchburg Savings Bank, and a director of the Worcester County National Bank and the Fitchburg-Leominster Airport Corporation.

After he was graduated from Harvard in 1909, he worked for two years as a mill hand learning the trade. He gave that up, however, to study farming at Massachusetts Agricultural College for a year, and from 1912 to 1915 operated a farm at Morristown, N. J. He had been active in civic affairs and was president of the Community Chest. He had been president of the Society for the Prevention of Cruelty to Children, and was a former vestryman of Christ Episcopal Church, where the funeral services will be held at 11 A.M. Wednesday.

Mr. Crocker was food conservator for Fitchburg during the World War, and later served in the Motor Transport Corps, Camp Johnston, Jacksonville, Fla.

He was a member of the Harvard clubs of Boston and New York, The Country Club, the Fay Club of Fitchburg, and the Oak Hill Country Club of Fitchburg.

Chester F. Scott

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., April 3, 1939—Chester F. Scott, who had been associated with Thilmany Pulp and Paper Company for a number of years, died Monday, March 27. He was asphyxiated by monoxide gas while in the garage at his home. He was 54 years old.

Mr. Scott was engaged by the Thilmany company in 1918, and was superintendent of its bag mill at Kaukauna, Wis., for six years. He was then transferred to the company's plant at Waukegan, Ill., and served for twelve years as its superintendent. He returned to Appleton six years ago, and had left the company's employ about a year ago. Burial was made in Riverside cemetery at Appleton.

William J. Barchard

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., April 3, 1939—William J. Barchard, founder and past president of the Barchard Box Company, Limited, Toronto, died in Toronto on March 26, in his 84th year. He took a deep interest in community affairs and was very prominent in the Orange Order, of which he had completed 66 years as a member.

Predeceased by his wife, he is survived by two sons and three daughters.

Ohio Discusses Pulp Manufacture

Approximately one hundred and twenty members and friends of the Ohio Section of the Technical Association of the Pulp and Paper Industry assembled at the Hotel Manchester in Middletown, Ohio, Saturday evening, April 1, 1939. K. P. Geohegan of the Aetna Paper Company, Dayton, Ohio presided as chairman.

Roy Zellers of the French Paper Company, Niles, Mich., was called upon to bring an invitation from the American Pulp and Paper Mill Superintendents to attend their convention at Washington in June.

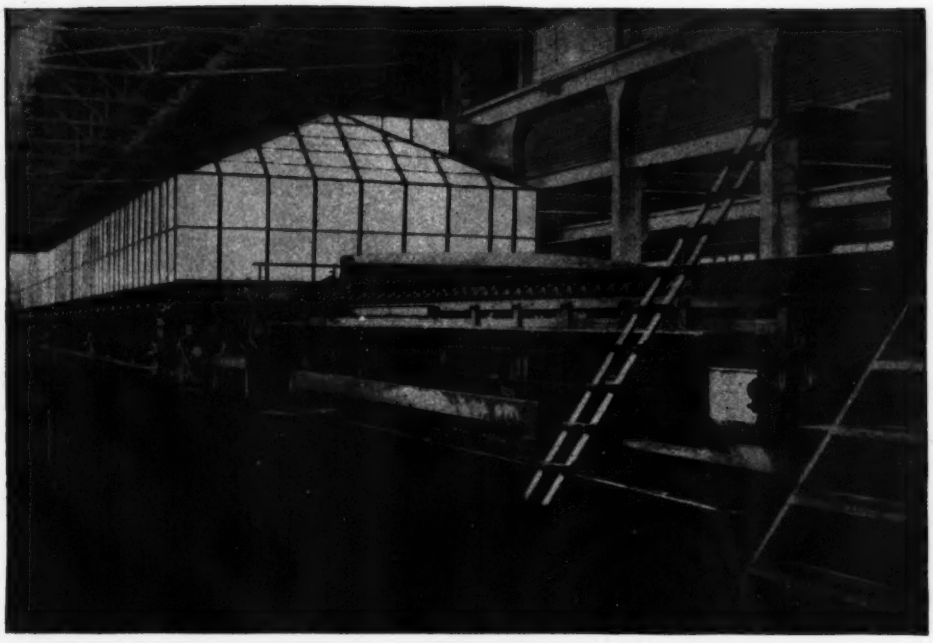
W. Norma Kelly, general manager of Weyerhaeuser's bleached sulphite mill at Longview, Wash., was introduced to the group. Mr. Kelly discussed "The Manufacture of Sulphite Pulp". In his talk he stressed particularly the methods and precautions necessary to produce a clean pulp.

As an introduction Mr. Kelly listed the raw materials required to produce a ton of pulp as wood, sulphur, limerock, water, chlorine, lime and caustic. After eliminating chlorine and sulphur as relatively clean materials he explained how in the various stages of manufacture dirt from the other sources was eliminated.

Following his talk a film "Trees and Men" made by the Weyerhaeuser Timber Company was shown to the group. The film illustrated logging activities on the Pacific coast and stressed their methods of conservation which today is recognized as an intragal part of the lumbering industry. The latter part of the film showed the initial steps in the preparation of wood for paper pulp.

The following men were present: Thage Dahlgren, C. R. Merriman, James Combie, Harry E. Hadley, Leonard Hoskins, John Ditmyer, Wm. Boast, Brainard Sooy, George H. Harvey, A. R. Harvey, Val Friedrich Jr., N. C. Leighton, C. J. Pflanzer, Wm. Reigers, John Burnett, Robt. K. Stevenson, J. Beck, John Webb, Herbert Bittmyer, Wm. Baxter, A. H. Frazer, Edward Lum, Chas. Jones Jr., Dave Donnie, William J. Patteson, J. R. Simpson, T. M. Chemerys, R. L. Betts, E. W. Gutliph, Albert Kind, Sam P. Broomhall, Sam Gard, Herb Randall, Ray Bennett, Ralph Buechler, Howard Buechler, J. J. Andrews, J. R. Arthur, Edwin Brandon, E. E. Kimmel, Charles Rybolt, M. I. Keirn, S. A. Cole, Robt. R. Weber, W. E. Gay, R. M. Bond, Nils G. Johnson, A. H. Allison, P. J. Jarardi, T. H. Latimer, C. H. Butterfield, G. B. Hughey, E. B. Gunyon, R. S. Yates, Geo. Fromm, C. W. Richards, Rolland D. Smith, Henry Waffenschmidt, W. D. Boggess, Edgar Turnbull, Myron Wittmer, Tom O'Flynn, B. M. Baxter, Allan Hyer, E. A. Bush, A. W. Henrich, H. L. Werth, A. J. Smith, Douglas Robbins, P. S. Cade, O. P. Gephart, Walter C. Slattery, Ed Fitzgerald, Bert C. Hopper, J. L. Mullins, R. L. Kutter, P. B. Borlew, T. Agronin, B. C. Hope, Claude E. Sorg, P. E. Howard, D. D. Patrick, E. H. Bindley, G. K. Larick, W. B. Hadley, W. H. Stetson, H. B. Sermon, G. H. Suhs, L. C. Currier, O. J. Nicol, Floyd Nein, Carl D. Roess, R. B. Roe, E. C. Hendrichson, W. N. Kelly, W. M. McNair, K. P. Geohegan, H. H. Harrison, J. E. Burdsall, R. L. Zellers, R. L. Eminger, D. Brittain, C. M. Baker, H. E. Slofman, T. E. Moser, O. E. Randall, Ben Osbourne, W. C. Shapleigh, P. G. Swayne.

ANOTHER BELOIT MACHINE



THIS FINE PAPER MACHINE IS THE PRODUCT OF THE MODERN ENGINEERING AND MANUFACTURING FACILITIES WHICH MAKE BELOIT THE LEADER IN MEETING THE EXACTING DEMANDS OF THE PAPER INDUSTRY

THE BELOIT WAY BELOIT IRON WORKS PAPER MACH'Y BELOIT WIS. U.S.A. **IS THE MODERN WAY**

UNITED PIGMENTS

Pure Titanium Dioxide

UNITANE-O

A brilliantly WHITE, pure titanium dioxide possessing excellent . . .

- **OPACITY**
- **BRIGHTNESS**
- **DISPERSION**

Suitable for ALL types of paper ranging from thin printing papers and waxing tissues to coated book and magazine stocks.

UNITANE O—110 was especially developed for paper pigmentation. Its excellent dispersion in water promotes good retention and excellent sheet formation. As a component of the beater furnish, it produces *whiter* sheets of *great brilliance*, and superior printing qualities.

SAMPLES of UNITANE O-110 will be sent promptly upon request.

UNITED COLORS & PIGMENTS

UNITED COLOR AND PIGMENT CO.

DIVISION OF INTERCHEMICAL CORPORATION

NEWARK, NEW JERSEY

SALES OFFICES IN PRINCIPAL CITIES

New C1 Rogers Circular Knife Grinder

Samuel C. Rogers & Co., 191-205 Dutton avenue, Buffalo, N. Y., have just placed on the market a new grinder to meet a demand for a precision low priced circular knife grinder of suitable capacity for grinding every variety single or double bevel circular knife from 1 to 8 inches in diameter inclusive. In the accompanying illustration the machine is shown with wet grinding attachment. It can be furnished also as a dry unit without wet attachment.

A one piece cored type cabinet base design provides positive assurance for true knife rotation and precision accuracy under the heaviest conditions. Adjustments to meet all requirements for circular knife grinding are provided by three slides with hand wheel screw controls. Each slide is carefully fitted with adjustable steel gibs to take up wear. Swivel is graduated to insure correct grinding angle. The same angle is maintained without any change from wear of grinding wheel or change in size of knife.

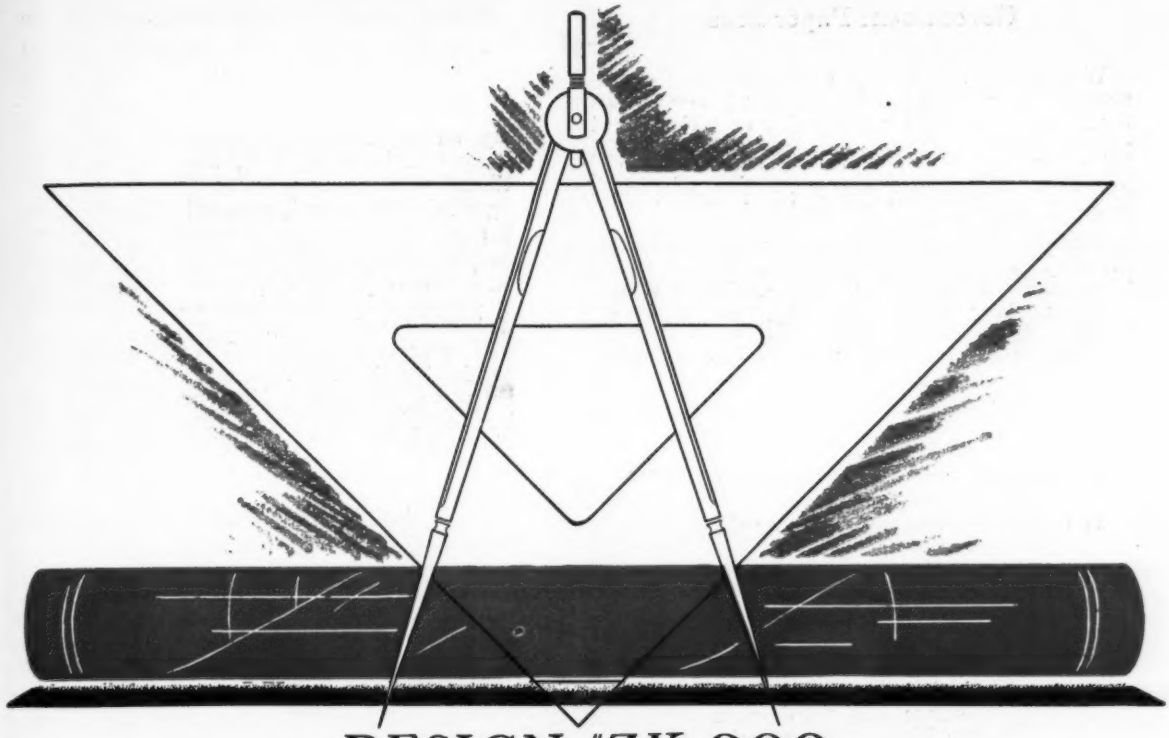
The grinding wheel 6 x ½ x ½ is placed on a ¼ h.p. totally enclosed direct motor driven arbor mounted on ball bearings, adjustable for elimination of end play. The motor is mounted for swiveling horizontally which enables grinding at any desired angle.

The knife is rotated by separate motor through V belt. The knife is mounted on a suitable arbor with flanges of proper size to rigidly support the knife during the grinding operation. Knife with arbor holes as small as ¼ inch can be mounted. Bushings to conform to the arbor size of knife are furnished. A ¼ h.p. motor rotates the grinding wheel. When wet attachment is used this motor is equipped with double shaft with V pulley and belt to drive the wet attachment.

The wet attachment consists of tank, centrifugal pump, pipings, petcock complete. Machine weight about 300 lbs. Size, 18 x 21 inches. Standard motors are for lighting circuit current. Each machine is equipped with emery dresser, wrenches, complete, ready to run. Machine is entirely self contained with control switches conveniently mounted on motors . . . and is very simple to operate. This same type machine is now available in two larger sizes, for knives up to 14 inches, also the number 3 size for knives up to 20 inches in diameter.

Self-Mailing Type Blotter

Wrenn Paper Company has invented a self-mailing type blotter, which is a very unique departure from the ordinary blotter. It is a regular blotting stock between two pieces of coated paper. The india tint coated side, or address side, adheres to the blotting in such a manner that it can be peeled off without destroying the effectiveness of the blotting. Use of this blotting stock eliminates need of envelopes.



DESIGN #ZK-OOO

By S & W — *for Progressive Mills*

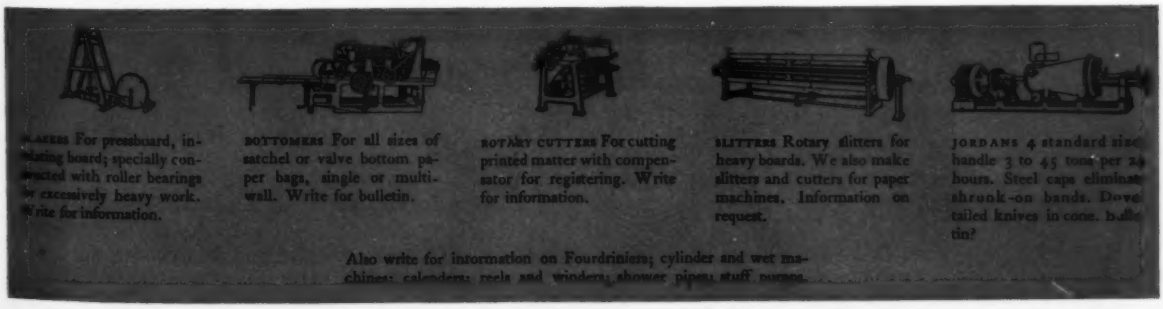
When S & W engineers fashioned the Undercut ream cutter, they were shooting at two marks — safety, with more than ordinary efficiency.

Safety comes from the design. Gravity, itself, is a positive safety feature. And dual controls keep the operator's hands below the table. Accidental starts are impossible: There's less spoilage.

The always-aligned knife (which can be installed by one man) delivers a *straight* upward cut. No slipping, perfect lay, and easier pad work come from this vibrationless cut stroke. There is an equalized hold of clamp.

Some mills have purchased as many as 30 Undercuts for work on the finest grades of paper. Equal success is obtained on bindersboard, cardboard, etc.

Will your mill modernize? We'll gladly send you a bulletin on Undercuts. Just have your secretary write for it.



PLANERS For pressboard, insulating board; specially constructed with roller bearings for excessively heavy work. Write for information.

BOTTOMERS For all sizes of satchel or valve bottom paper bags, single or multiwall. Write for bulletin.

ROTARY CUTTERS For cutting printed matter with compensator for registering. Write for information.

SLITTERS Rotary slitters for heavy boards. We also make slitters and cutters for paper machines. Information on request.

JORDANS 4 standard sizes handle 3 to 45 tons per 24 hours. Steel caps eliminate shrunk-on bands. Dovetailed knives in cone. Bulletin?

Also write for information on Fourdriniers; cylinder and wet machines; calenders; reels and winders; shower pipes; stuff pumps.

The SMITH & WINCHESTER Manufacturing Company

1828

ONE HUNDRED AND TEN YEARS OF ADVANCEMENT

PLANT AND OFFICES AT SOUTH WINDHAM, CONN.

Government Paper Bids

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 5, 1939—The Government Printing Office has received the following bids for 2,000 sheets of 24 x 36 Quaker drab cloth lined paper; Whitaker Paper Company, $146.68 per M sheets; Mudge Paper Company, $146.97; R. P. Andrews Paper Company, $151.80; and Barton, Duer & Koch Paper Company, $147.44.

For 5,000 sheets of 22 x 28 green railroad board; Stanford Paper Company, $28.99 per M sheets; Barton, Duer & Koch Paper Company, $29.00; Whitaker Paper Company, $30.55; Mudge Paper Company, $30.55; Virginia Paper Company, $31.00; Paper Corp. of U. S., $29.88; and Mathers-Lamm Paper Company, $31.55.

For 400,000 pounds of manila calendered tag board, basis 22½ x 28½; Barton, Duer & Koch Paper Company, 6.9 cents.

For 500,000 pounds newsprint paper in 48 inch rolls; National Pulp and Paper Company, 2.425 cents (400,000 pounds only); Paper Corporation of U. S., 2.95 cents; Old Dominion Paper Company, 2.988 cents; and Barton, Duer & Koch Paper Company, 2.97 cents.

For 40,000 pounds yellow sulphite writing paper in 32 inch rolls; Mathers-Lamm Paper Company, 5.77 cents; Aetna Paper Company, 6.2 cents; Cauthorne Paper Company, 5.11 cents; Virginia Paper Company, 5.83 cents; Old Dominion Paper Company, 6.348 cents; Marquette Paper Company, 5.33 cents; Whitaker Paper Company, 5.23 cents; Mudge Paper Company, 5.87 cents; Stanford Paper Company, 5.9 cents; Barton, Duer & Koch Paper Company, 5.34 cents and R. P. Andrews Paper Company, 5.87 cents.

For 74,800 pounds (800,000 sheets) of 32 x 42 white sulphite writing paper; Aetna Paper Company, 5.72 cents; Cauthorne Paper Company, 5.56 cents; Old Dominion Paper Company, 5.848 cents; Marquette Paper Company, 5.65 cents; Stanford Paper Company, 5.99 cents; Barton, Duer & Koch Paper Company, 5.49 cents; R. P. Andrews Paper Company, 6.95 cents; and Perkins Goodwin Company, 5.35 cents.

Indianapolis More Optimistic

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., April 3, 1939—A trifle more optimism seemed to feature the local paper market this week both in the fine paper and common paper fields. In the last week or so there was some disturbance in sulphites, but this seems to be straightening out. Local jobbers feel there is more stability in the general fine paper market and that demand eventually will show the effects of this. Volume has been fair and is expected to improve. There are hardly any executives but who feel this year will show an improvement over last.

In the common paper field business is picking up steadily with all lines apparently benefitting. As one jobber said: "The general situation is good. Mills are holding firm on their prices, business is improving and if the jobbers don't make any money it is their own fault. They can blame no one but themselves if they want to cut prices under present conditions.

The last two weeks have seen a big increase in inquiries and orders for summer specialties. According to local jobbers, hold-over stocks in retail hands were small and sales have shown a marked increase in the last week. The Capital Paper Company here has a picnic deal going, including in one package all necessary paper utensils for the average picnic and it is selling well, according to C. V. Jewell, sales manager.

A good demand now is reported in the container field, much of the increase coming from the ice cream trade, which is in the market for the early spring business. Box factories also report a broadening consumer base and believe April will see a decided turn for the better.

Building paper demand continues to improve and is considerably ahead in volume for the first quarter than it was a year ago. Jobbers believe this will be the best year since the depression started. Dealers are building up their stocks and also report a steady demand.

Little change is seen in the paper stock market. Prices have shown no change in the past week and the market is fairly steady.

Goes With Moore & Munger

L. Gordon Campbell, manager of the lubricating bulk sales department of Standard Oil Company of Indiana at Chicago, on April 1 will join Moore & Munger of New York City, brokers of petroleum waxes and producers and marketers of clays for use in the manufacture of paper, rubber and other products. With Standard Mr. Campbell has directed the sales of lubricating oils, waxes, petrolatums, candles, white oils and related products to jobbers and oil companies.

Mr. Campbell started with Imperial Oil Limited at its refinery at Regina, Saskatchewan, Canada, in 1919. He joined Midwest Refining company in its lubricating department at Denver, Colo., in 1920, and was transferred to Chicago when Midwest was acquired by Standard of Indiana and the lubricating department was moved to Chicago and expanded to include not only products made at the Midwest plant at Casper, Wyo., but also products made at the several Standard plants.

When Standard's lubricating department was divided into divisions in 1925, Mr. Campbell was appointed assistant manager of the new bulk sales division in charge of sales to all resellers of the various products manufactured in the lubricating departments of all refineries. He was promoted to manager of the lubricating bulk sales department in 1934.

Mr. Campbell was educated at Upper Canada college and the University of Toronto. He spent three years in Europe with the Canadian Expeditionary forces during the World War.

Paper Specifications Committee Meets

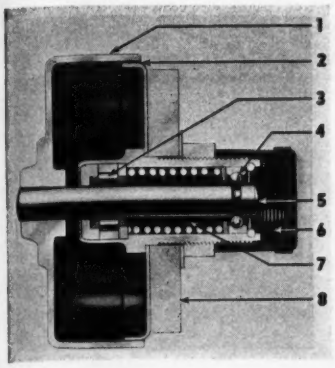
[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 5, 1939—A preliminary meeting of the Paper Specifications Committee of the Joint Congressional Committee on Printing has been held and further meetings will continue to be held until the schedule is completed.

While no date has been set for the bid opening for paper for the Government Printing Office for six months period, effective July 1, it is expected bids will be opened the latter part of May with awards being made a week later.

A New Antifriction Idler Pulley

The widespread acceptance of an economical, free-running idler pulley in the textile industry has led SKF Industries, Inc., Philadelphia, to develop this unit for machines in other industries having light and medium duty high speed belt drives. More than 1,870,000 of these units are in use on textile spinning and twisting frames and on similar drives.



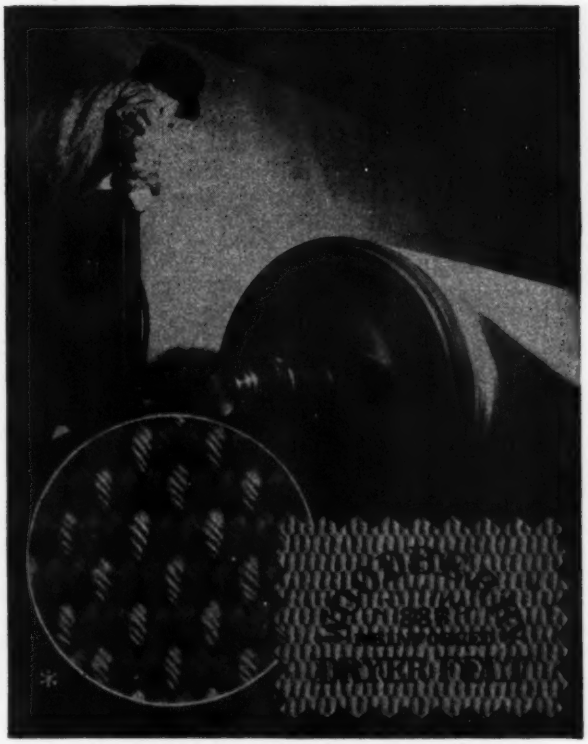
The ball and roller bearing idler pulley consists of a balanced standard or special pulley (1), which is provided with a dust-proof protective cover (2) to form an effective seal. This seal eliminates all types of abrasive dust from the relatively heavy-duty roller bearing (3), and the stabilizing ball bearing (4). These special bearings run directly on a through-hardened, chrome steel shaft (5), which gives the unit a maximum capacity within its compact dimensions. The ball bearing (4) acts as an outboard bearing and insures surface-to-surface contact between the rollers and the shaft at all times. In addition, this deep groove ball bearing carries thrust loads to permit the assembly to operate equally well in either vertical or horizontal positions. Grease cup (6) is provided so that a measured amount of grease may be placed in it every second year. At the time of the unit's assembly in the factory, an adequate amount of grease is placed in the large reservoir (7) to last the initial two years' operation (approximately 10,000 operating hours). Number (8) indicates the ease with which the unit is mounted.

These pulley units are easily mounted on almost every type of machine by simply drilling a 13/16 or 1 inch hole in a piece of flat steel or casting 5/16 to ⅜ inches thick and may be mounted directly to the frame, or on several types of swing brackets. At present there are five standard sizes of crowned pulleys furnished with the unit, and each having protective covers to match: 2¾ x 31/32 inches, 2¾ x 1¼ inches, 3½ x 1¼ inches, 3½ x 1 11/16 inches, 4¾ x 1¾ inches, with overall lengths up to 3 15/18 inches. The units provided for special designs have the same overall length, and pulley diameters can be of any reasonable size that can be mounted on axles of 0.3071 and 0.3465 inches in diameter.

With standard well-balanced pulleys, the largest unit of this type is rated for a minimum life of 50,000 working hours (90 per cent will operate with an average life of five times the minimum) when running at 100 rpm with an external radial load of 42 pounds, and axial thrust load against the housing shoulder of 20 pounds, or 9½ pounds in the opposite direction. At 500 rpm, this external load may be 26½ pounds, and the thrust loads, 13 or 6½ pounds. At 2500 rpm, the respective loads may be 20 pounds radial; 10 or 6½ pounds thrust. At 10,000 rpm, the loads may be 13 pounds radial and 6½ pounds thrust in either direction.

NEW ECONOMIES in DRYER FELTS obtained with WOODBERRY 887

REINFORCING GREATLY PROLONGS THEIR LIFE



* WOODBERRY 887 MAGNIFIED 2½ TIMES

New economies are being effected by leading paper mills everywhere throughout the country with WOODBERRY 887 dryer felts. These new patented felts are reinforced at intervals on the face with asbestos yarns which give them considerably longer life and reduce operating costs.

All the virtues of fine, all cotton felts, are retained in WOODBERRY 887's. They are fast drying, requiring a minimum of steam consumption. Shrinkage and stretch has been reduced to a minimum.

Like all Mt. Vernon-Woodberry Mills products, they are woven to rigid standards of tolerance and are really precision fabrics. Specify WOODBERRY 887 Dryer Felts and discover the savings they will effect for you.

MT. VERNON-WOODBERRY MILLS, INC.
TURNER HALSEY COMPANY
40 WORTH STREET *Selling Agents* NEW YORK CITY
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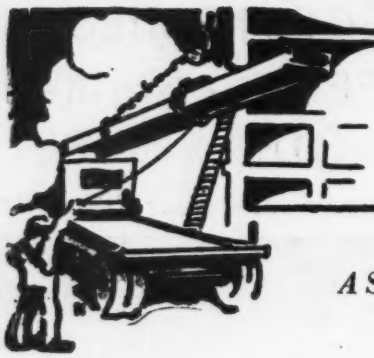

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Financing and Operation of Pulp and Paper Mills

General Construction News

Manitowoc, Wis.—The Kieckhefer Container Company, 1715 West Canal street, Milwaukee, Wis., manufacturer of corrugated paper boxes and containers, has arranged for purchase of tract of land in Southern part of Manitowoc, to be used as site for new branch plant. It will be one-story, totaling close to 70,000 square feet of floor space, estimated to cost over $125,000, including equipment. It is proposed to begin work on project in near future.

North Bergen, N. J.—The Gibraltar Corrugated Paper Box Company, Inc., Bergen turnpike and 36th street, manufacturer of corrugated paper boxes and containers, has approved plans for new addition to plant, to be one-story, 75 x 300 feet, reported to cost over $85,000, with equipment. General contract for erection has been awarded to the J. W. Ferguson Company, 152 Market street, Paterson, N. J., and work is scheduled to be placed under way at once. Installation will include a traveling crane and other mechanical-handling facilities, in addition to general production machinery. Considerable increase in present capacity will be carried out. W. P. Katz, Inc., 20 South Broadway, Yonkers, N. Y., is architect.

Detroit, Mich.—The Detroit Paper Products Corporation, 5800 Domine street, manufacturer of corrugated paper boxes and containers, and other paper goods, will triple present plant capacity in connection with an expansion and improvement program at plant, recently referred to in these columns. Additional machinery and equipment will be installed in different divisions of production, including corrugated carton department, especially for increased output of a new type of shipping container recently developed at the plant. Expansion, also, will be carried out in department for manufacture of corrugated, foil-lined insulation for refrigerators and other service. Work on project is being placed under way and orders for equipment placed. Walter B. Hadley is production manager.

Milwaukee, Wis.—The George A. Schulz Company, 433 West Clybourn street, manufacturer of corrugated boxes and containers, has completed plans for new addition to plant, to be 40 x 100 feet, with wing extension, 28 x 60 feet. It will be used primarily for storage and distribution. New unit will be located on West Oregon street, and is reported to cost over $35,000, with equipment. Bids have been asked on general contract and construction award will be made soon. Company is also making alterations and improvements in a factory building at same location, to cost in excess of $30,000. Frank F. Drolshagen, 647 West Virginia street, Milwaukee, is architect.

Battle Creek, Mich.—The Michigan Carton Company, East Fountain street, manufacturer of paper boxes and containers, has preliminary plans under way for new one-story addition to plant, to be used primarily for expansion in storage and distributing division. Cost reported close to $30,000, with equipment. It is understood that bids will be asked soon on general erection contract. Shreve, Anderson & Walker, Marquette Building, Detroit, Mich., are architects.

Charlotte, N. C.—Dixie Tag and Envelope Company, East Fourth street, manufacturer of paper tags and allied specialties, envelopes, etc., has concluded negotiations for lease of former mill of the Elizabeth Cotton Mills, located on Dowd road, and will remodel and equip for new paper-converting plant. Work will be placed under way at once. Equipment and facilities will be provided for large capacity.

Binghamton, N. Y.—The Agfa Ansco Corporation, 40 Charles street, manufacturer of photographic papers and other processed paper stocks, films and photographic materials, has acquired a tract of land adjoining present plant, totaling about six acres, and will use part of plot as site of new addition to plant. Plans are scheduled to be drawn soon. Cost reported over $75,000, including equipment.

Detroit, Mich.—The Hinde & Dauch Paper Company, Decatur street, Sandusky, Ohio, manufacturer of corrugated boxes and containers, is pushing erection of new branch plant at West Chicago avenue and line of Pennsylvania Railroad, Detroit, where tract of about 11 acres of land was purchased last fall, as previously noted in these columns. Main structure will be one-story, 200 x 510 feet, and will be equipped for large capacity, primarily in the line of corrugated boxes and shipping containers for the automobile industry. Completion is scheduled for early in May, when company will place unit in service at once. It is reported to cost about $500,000, with machinery. Otto Randolph, Inc., 55 West Jackson boulevard, Chicago, Ill., is general contractor. Charles U. Harvey, heretofore in charge of local branch of company, will be manager at new mill.

New York, N. Y.—The Butty Container Corporation, recently organized with capital of 10,000 shares of preferred stock, and 3000 shares of common stock, is said to be planning early operation of a local plant for the manufacture of paper boxes

and containers. New company is represented by Prentice-Hall, Inc., 90 Broad street, New York.

Franklin, Va.—The Chesapeake-Camp Corporation, manufacturer of kraft paper stocks, liner board and allied specialties, has work under way on two new additions, previously referred to in these columns, to be used for increased capacity in pulp wood department and recovery division, respectively. The structures will be of large size and will require several months for final completion, with cost reported over $200,000, including machinery and equipment.

New Companies

Wilmington, Del.—The Louisiana Pulp and Paper Corporation has been chartered under Delaware laws with capital of $1,000,000, to operate a pulp and paper mill in Louisiana. The Corporation Service Company, Delaware Trust Building, Wilmington, is local corporate representative.

Chelsea, Mass.—Single Service Containers, Inc., 88 Gerrish avenue, has been organized with capital of 5000 shares of stock, no par value, to deal in paper boxes and containers, and allied products. Melvin H. Sidebotham is president, and Harlow M. Russell, treasurer.

Wilmington, Del.—The Manifold Systems Company, Inc., care of the Corporation Trust Company, Industrial Trust Building, Wilmington, has been incorporated under Delaware laws, with capital of 1,000 shares of stock, no par value, to manufacture and deal in paper products of various kinds.

Boston, Mass.—Columbia Paper Company, 40 Lincoln street, has filed notice of organization, to deal in paper products of various kinds. Company is headed by Maurice L. Neustadter, 199 Pleasant street, Brookline, Mass., and Arthur Cohen, 40-A Cheney street, Roxbury, Boston.

New York, N. Y.—La Papelera, Inc., has been incorporated with capital of 200 shares of stock, no par value, to deal in paper specialties of different kinds. New company is represented by Joseph D. Moguel, Jr., 165 Broadway, New York, attorney.

Philadelphia, Pa.—The National Paper and Sales Company, 600 South Delaware avenue, has filed registration of company, to deal in paper goods of various kinds. Clyde A. Eagan, 6030 Samson street, and Wesley H. Caldwell, Jr., 7413 Crittenden street, are heads.

Long Island City, New York—The Lonis Manufacturing Company, Inc., has been incorporated with capital of 200 shares of stock, no par value, to manufacture and deal in corrugated paper and other paper products. New company is represented by Emanuel H. Jarabek, 137-28 Northern boulevard, Flushing, L. I., attorney.

Effect of Adhesive on Strength Characteristics of Corrugated Fibreboard

An article entitled "Effect of Adhesive on Strength Characteristics of Corrugated Fibreboard," by D. W. McCready, Associate Professor of Chemical Engineering of the University of Michigan, has attracted considerable attention and may be obtained in bulletin form from the Sodium Silicate Manufacturers Institute, P. O. Box 138, Philadelphia, or the Standard Silicate Division of the Diamond Alkali Company of Pittsburgh, Pa.

SEES IMPROVEMENT AHEAD

(Continued from page 17)

previous law, was sustained by the courts and was used in several instances by labor unions.

Mill Operations Not Impaired By Ice

The spring ice breakup in the Wisconsin and Fox Rivers has not impaired operations at various paper mills, although there has been considerable high water. The only doubtful point situation is that of the Wausau Paper Mills Company, Brokaw, Wis. The company rebuilt an old wooden dam for temporary use when part of its concrete structure was swept away a year ago. Ice in the northermost part of the Wisconsin River was still to break up and no damage has thus far been reported.

Paper Mill Waste Not Harmful

Demand that all of the paper mills at Neenah and Menasha, Wis. be connected to the municipal sewage disposal system at a considerable expense has been set at rest by a report submitted to the Neenah city council by J. M. Holderby, disposal plant superintendent. Mr. Holderby declared the Wisconsin State Board of Health ruled it was not necessary for these mill connections to be made because the sewage was so dilute it did not need treatment.

Wife of Clarence Jackson Dead

Clarence E. Jackson, mill manager at Wisconsin Rapids, Wis. for the Consolidated Water Power and Paper Company, was called to Chicago Tuesday night, March 28, when his wife passed away there suddenly of a heart attack while visiting her parents, Mr. and Mrs. Ira S. Read. Mrs. Jackson had been in poor health, and went to Chicago two weeks earlier to receive medical treatment.

Revise Tissue Paper Practice

The Standing Committee in charge of Simplified Practice Recommendation R46, Tissue Paper, has approved a first revision of the recommendation, and the Division of Simplified Practice of the National Bureau of Standards has mailed copies to all interests for the purpose of determining whether it is generally acceptable for promulgation.

This revision is based on data submitted by the Tissue Association. It covers wrapping tissue, roll and interfolded toilet tissue, and paper napkins. Four tables are included showing designation or grade, colors, fiber content, sheet sizes, number of sheets per roll or package, basis weight, packing, and put-ups.

The revision also provides for labeling wrapping tissue, and a reproduction of the label issued by the Tissue Association for this purpose is included. No provision is made for labeling any of the other tissue products.

The original recommendation was approved by a general conference of manufacturers, distributors, and users in 1925. Following acceptance by the industry, this recommendation became effective in 1926 and was reaffirmed in 1927 and 1929.

Free mimeographed copies of the proposed revision may be obtained from the Division of Simplified Practice, National Bureau of Standards, Washington, D. C.

PAPER TRADE JOURNAL

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Henry J. Berger
EDITOR

Ronald G. Macdonald
Editor Technical Section

Lynne M. Lamm
Washington Correspondent

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COMING EVENTS IN PAPER INDUSTRY

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, Fall Meeting, Syracuse Hotel, Syracuse, N. Y., September 12-14.

NEW ENGLAND SECTION, Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—Second Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

AMERICAN PULP AND PAPER MILL SUPERINTENDENTS ASSOCIATION, Annual Convention, Wardman Park Hotel, Washington, D. C. June 13-15.

FIRST ANNUAL SOUTHERN PAPER FESTIVAL, Savannah, Ga. April 16-19.

NATIONAL SAFETY COUNCIL, PAPER AND PULP SECTION, Annual Meeting, Atlantic City, N. J. October 16-20.

THAT 80 BILLION INCOME

The fallacy of spending our way to prosperity or, as President Roosevelt recently expressed it, "investment for prosperity," dies hard, even when the factual result of several years of practicing that particular theory plainly indicates it contravenes economic law and produces results not commensurate with glittering promises expected by its followers and compensation wholly unjustified by the huge expenditures necessary to conduct the experiment. Unfortunately for productive enterprise, the brilliance of the spending to attain prosperity theory has produced meagre results and its brilliance has now faded into a blot of red ink, for the national deficit is still going up as high taxes are forcing corporate income and internal revenue down.

As the controversy over economy, budget balancing and tax revision heightens in the legislative halls at Washington, President Roosevelt said on March 21 that any tax changes by Congress cannot be tax reductions but must be confined to tax alterations, unless Congress at the same time votes to cut Government expenses. In his annual message to Congress in January Mr. Roosevelt reminded Congress that it had the choice of seeking a balanced budget by cutting Government costs by one-third through reductions in AAA, WPA, PWA and social security, or of seeking a balanced budget by continuing a program of "investment for prosperity" through continuance of the activities that are giving the country an unbalanced budget. Mr. Roosevelt's point was that to force a balance of the budget by cutting expenses would force this nation to be a 60-billion-dollar nation, while his spending program was designed to make the nation an 80-billion-dollar nation with the budget balanced through the existing tax rates at that higher income level.

There can be no doubt that the productive enterprises in this country are capable of producing a national income far higher than 80 billion dollars a year. In 1929 the national income was $81,128,000,000. But, there is a relationship between income and taxes and while the Administration may expect to at least duplicate the income of the year 1929, there is indication in the present business situation to create doubt if an 80-billion-dollar income can be attained under the present heavy rate of taxation.

A clear presentation of this relationship of taxes to national income was made by Godfrey N. Nelson, lawyer, tax expert and secretary of The New York Times Company, who said in part: "President Roosevelt's budget message of last January stated that revenue from taxes, which constitutes over 95 per cent of all the income of the Federal Government, depends mainly on two factors: 'The rate of taxation and the total of the national income.' Unquestionably the national income is a controlling factor in the production of revenue; but the rates of income taxes, instead of directly determining the amount of revenue, according to the degree of progression, seem rather to modify the revenue by their influence upon the national income. High income-tax rates tend to discourage the processes which make for enhancement of the national income. This has been proved fairly conclusively by the inverse ratio which the income-tax rates bear to the totals of annual national income in the nineteen-twenties. Although the statistics for the nineteen-thirties are not as readily conclusive, taking related facts into consideration, however, they do not controvert the suggested principle."

By means of a tabulation of the national income from 1931 to 1940, Mr. Nelson showed that the revenue produced during all the years in which the peak surtax rate of 63 per cent was effective (1932 to 1935 inclusive) produced, considering that taxes are collected in the next succeeding year, less revenue proportionately than the peak surtax of 25 per cent for 1931, based on the 1930 national income." For example, in 1931, the national income was $53,822,000,000, income-tax receipts, $1,860,000,000, miscellaneous taxes and other receipts, $1,330,000, and individual peak surtax rate plus normal tax was 25 per cent. In 1935, the national income was $53,173,000,000; income-tax receipts, $1,057,000,000; miscellaneous taxes and other receipts, $2,701,000,000; and individual peak surtax rate 63 per cent. In 1939, the

estimated national income is $65,000,000,000; income-tax receipts $2,086,000,000; miscellaneous taxes and other receipts, $3,434,000,000; and individual peak surtax rate, 79 per cent.

In touching on income and unemployment Mr. Nelson said in part: "While the national income bears a very direct relationship to unemployment, to what extent government expenditures affect the national income and unemployment is not clear. The most disconcerting indication is that unemployment is back to the 1934 level, when the national income was only forty-eight billions, as compared with an estimate of sixty-five billions for 1939, and with prospects of spending nearly nine and a half billion dollars in the fiscal year ending June 30, 1939."

It is to be hoped that the curb on spending recommended by the Chamber of Commerce of the United States may be heeded, as Federal, State and local taxes reached a peak of 14½ billion dollars in 1938 and deficits still continue to mount. The adoption of the four-point program recommended by the Chamber would undoubtedly prove of great aid to the restoration of confidence and release millions of idle funds which hesitant investors are now withholding from productive use.

Foreign Pulp and Paper Trade

According to the 1938 Review of United States Foreign Trade in Pulp and Paper, published February 1939 by the Forest Products Division of the United States Department of Commerce, imports of wood pulp and paper during 1938 were valued at approximately $200,000,000.

Pulpwood imports, valued at $11,000,000 amounted to 6 per cent of the total imports, and peeled spruce was valued at $7,500,000. Newsprint imports, of a little more than 2,000,000 tons, were slightly over 50 per cent of all pulp and paper imports, while wood pulp represented 37 per cent of the total. Cigarette paper ranked next in value to newsprint, totaling nearly $4,000,000. Kraft wrapping paper was third with a value slightly more than $1,000,000.

Exports of paper and paper base stocks in 1938 were valued at approximately $37,600,000, the second highest since 1929, surpassed only by $54,000,000 in 1937. Paper accounted for approximately 70 per cent of the total and paper base stocks the remaining 30 per cent. Large purchases by Canada and Mexico were made in kraft wrapping paper, which were 55 per cent higher than in 1937. Since 1920, exports of paper base stocks have been increasing and in 1938 the value was the second highest on record.

To Discuss Market Activities

BOSTON, Mass., April 3, 1939—Current market activities will be discussed at a luncheon meeting of the Fine Paper Division of the New England Paper Merchants Association to be held Thursday at the Boston Chamber of Commerce. Frederick G. Lockwood, vice-president in charge of the Fine Paper Division, will preside.

Production Ratio Report

These statistics are based upon paper production reports to the American Paper and Pulp Association.

COMPARATIVE MONTHLY SUMMARIES[1]

Months	1939	1938	1937	1936	1935	1934
January	77.5%	63.9%	90.3%	76.1%	65.8%	.....
February	81.7%	68.7%	90.1%	77.9%	70.0%	.....
March	.....	69.6%	90.3%	76.0%	70.5%	.....
April	.....	68.3%	92.1%	82.3%	70.0%	.....
May	.....	69.0%	90.6%	81.6%	69.4%	.....
June	.....	66.0%	87.3%	80.7%	72.3%	.....
July	.....	72.0%	81.8%	77.3%	64.9%	.....
August	.....	77.2%	82.9%	81.5%	70.9%	.....
September	.....	76.3%	78.6%	80.5%	71.9%	58.2%
October	.....	82.5%	73.5%	87.6%	75.6%	64.7%
November	.....	79.6%	61.9%	88.0%	75.3%	61.7%
December	.....	74.4%	54.5%	85.9%	71.2%	59.6%
Year Average	.....	72.3%	80.6%	81.3%	70.5%	.....
First 12 weeks	80.7%	67.1%	90.3%	76.6%	68.3%	.....

COMPARATIVE WEEKLY SUMMARIES[1]

CURRENT WEEKS, 1939		CORRESPONDING WEEKS, 1938	
February 18	82.7%	February 19	68.4%
February 25	80.5%	February 26	71.3%
March 4	83.3%	March 5	67.8%
March 11	84.3%	March 12	70.1%
March 18	82.6%	March 19	69.3%
March 25	82.8%	March 26	68.5%

The following statistics show the number of mills reporting by ratio groups:

	Number of Mills Reporting—Current Weeks					
Ratio Limits	Feb. 18, 1939	Feb. 25, 1939	Mar. 4, 1939	Mar. 11, 1939	Mar. 18, 1939	Mar. 25, 1939
0% to 50%	47	58	55	57	48	46
51% to 100%	260	247	250	240	233	165
Total Mills Reporting	307	305	305	297	281	211

PAPERBOARD OPERATING RATIOS

Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1935	62%	68%	68%	63%	61%	66%	62%
1936	62%	67%	67%	70%	69%	70%	69%
1937	80%	86%	86%	88%	85%	77%	66%
1938	54%	60%	61%	57%	58%	56%	57%
1939	60%	67%	....	....	....	....	....

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1935	67%	71%	77%	71%	61%	66%
1936	75%	78%	82%	80%	74%	72%
1937	74%	69%	65%	55%	45%	73%
1938	66%	66%	70%	65%	59%	61%

Week end. Feb. 18, 1939—67%
Week end. Feb. 25, 1939—68%
Week end. Mar. 4, 1939—68%
Week end. Mar. 11, 1939—70%
Week end. Mar. 18, 1939—70%
Week end. Mar. 25, 1939—73%

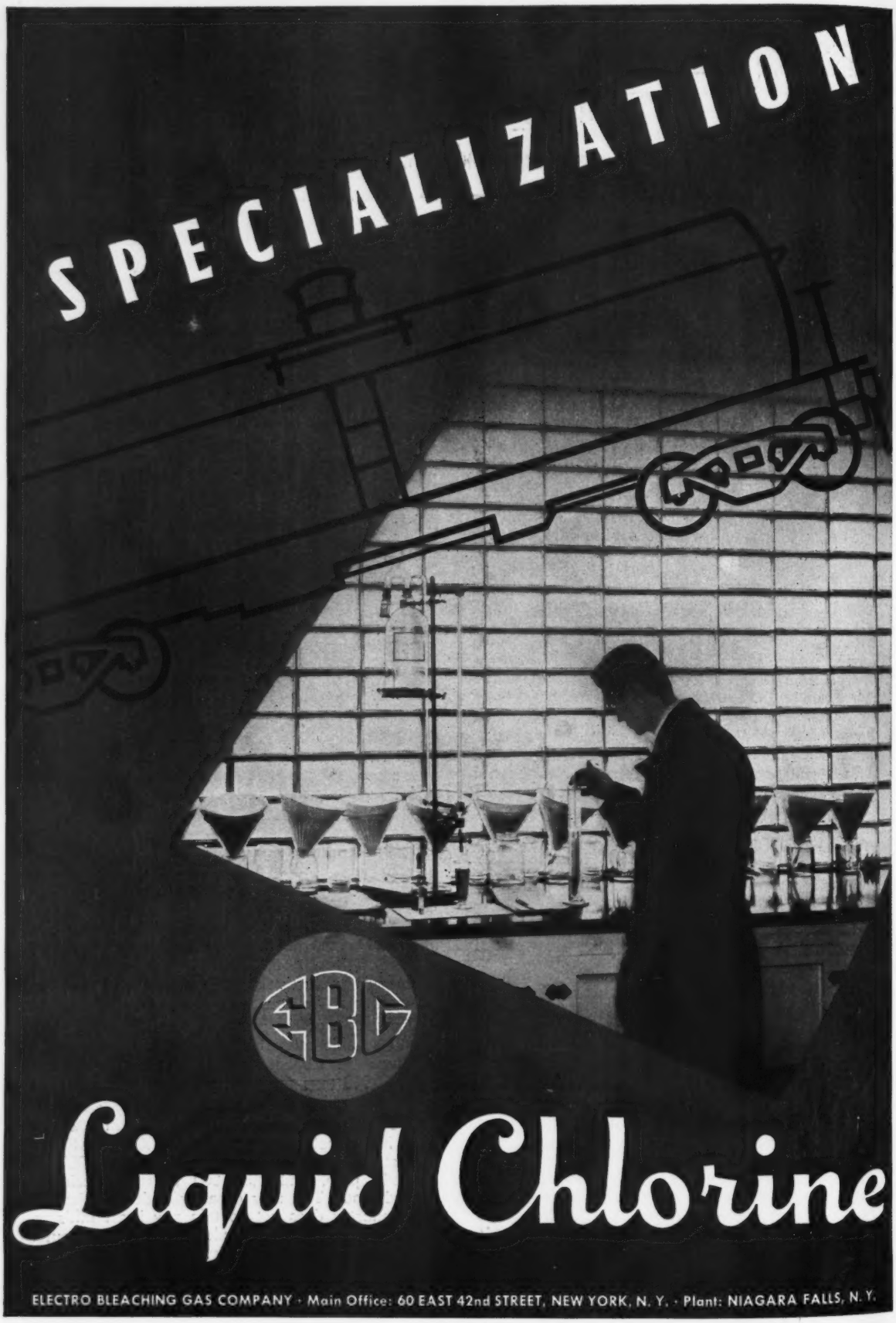
[1] Production-capacity ratios are based upon six-day capacity ratings which are adjusted periodically to correspond with the ratings reported by individual companies. Ratios are subject to revision until all reports are received.

Germany's Pulp Capacity Increased

The incorporation of Czecho-Slovakia and Memel into the German Reich added 335,000 metric tons of chemical pulp and 95,000 tons of mechanical pulp to Germany's productive capacity, according to the Forest Products Division, Department of Commerce.

The output of the greater German Reich, according to reliable estimates, now approximates 2,223,000 tons for sulphate pulp, 106,000 tons for soda pulp, 30,000 tons for kraft pulp, and 1,555,000 tons for mechanical pulp.

The German wood pulp industry at the end of 1937 had a potential capacity of 1,600,000 tons of sulphate pulp, 30,000 tons of kraft pulp, 70,000 tons of soda pulp, and 1,300,000 tons of mechanical groundwood. The new capacity added to the German industry does not contain any kraft mills and Germany will remain dependent upon outside sources for this class of pulp. However, it adds 285,000 tons of bleached sulphite and 338,000 tons of unbleached sulphite to the Reich's potential output.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Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

The Novak Wet Web Process*

By C. H. R. Johnson [1]

Abstract

This is a new process for the safe and economical introduction of materials into the wet web of paper. These materials are applied by a unit which is located in the press section of any type of paper machine.

Introduction

The tremendous use of paper today is largely the result of our increasing ability to incorporate other materials with the fibers into the sheet or board. It is commonly recognized that although we have learned a geat deal about the use values of these added materials, we have not been as successful in applying them in the most economical and uniform manner.

For instance, in applying materials in the beater we know that there are large losses, most of which are beyond control. In adding materials in a continuous manner to the furnish between the beaters and the paper machine there are also large attendant losses and this method can only be applied safely with a very limited number of materials. In applying materials at or near the dry end of a paper machine it has been found next to impossible to thoroughly saturate a web. We find size tubs and calenders are used for what might be considered as coating, but here too we find ourselves limited in the choice of materials which may be used for this purpose. To incorporate large amounts of materials into a sheet of paper it has been necessary to use what is known as the dry saturation method. This involves the use of a large piece of converting equipment for saturating the paper and a drier section to bring the treated paper to a dry state again. There is also required the use of expensive solvents for sheet penetaration purposes, and despite the use of recovery systems there are large losses to be considered.

Brief History

Novak, recognizing these difficulties, evolved the unique idea of safely introducing materials into a self supporting wet web in the press section of a paper machine and was granted patents, including No. 1,966,458. Development work was first carried out on small experimental units and in 1932 was put into commercial operation in a paper mill in Brattleboro, Vt. Here latex was introduced by the wet web process into a sheet of paper for the manufacture of leather substitutes. The success of this application naturally opened the way for saturating the wet webs with a great number of other materials and a commercial size experimental mill was established at Manchester, Conn., for the purpose of introducing the process to the paper industry.

The Process

The principle of wet web saturation is based on the fact that when a web, taken from the press section of a paper machine, is immersed in water, it swells considerably, causing large interstices to be formed between the fibers. If the water holds materials in solution, dispersion, or in an emulsion, they will easily enter the web while it is in this swollen state.

In the Novak process the web is held safely while being immersed and then pressed back to its original state, and it enters the driers in the same condition of wetness as it was before being saturated. This same principle of operation applies when the process is used on wet machines.

Mechanical Description

The equipment involved in the Novak process is very simple and is quickly recognized as being very similar to that which is now being used on paper machines. The heart of the process consists of a wire-faced cylinder rotating in a tank containing the saturant and this cylinder operates with a top rubber-covered couch roll. A carrying felt enters the satu-

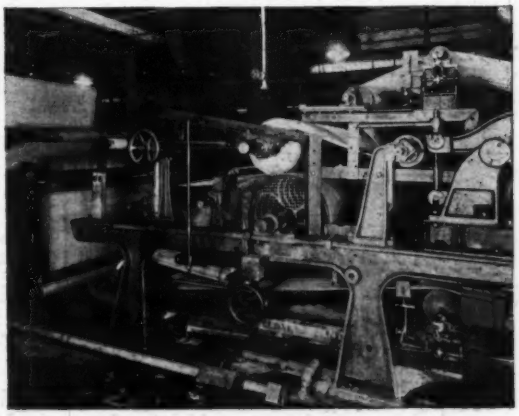

FIG. 1.

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Roosevelt Hotel, New York, N. Y., Feb. 20-23, 1939.

[1] Member TAPPI, The Paper Division of Raybestos-Manhattan, Inc., Manchester, Conn.

rating tank while being wrapped around the wire-faced cylinder and is then carried away from it by the couch roll. This felt then enters one or more presses and returns over stretch, guide, and felt rolls such as are used on ordinary press felts. The entire unit is driven through its main press.

When saturating the heavier webs, it has been found desirable to operate the unit with a top felt, and when working with light webs, this felt may be dispensed with. The saturating unit can be clothed with wires as well as felts.

Fig. 1 shows the wire-faced cylinder with its couch roll and Fig. 2 is a view of the complete unit operating on a board machine. It will be noticed that this unit at the time the photograph was taken, was equipped with a bottom carrying felt and a top wire.

As shown in Fig. 2, it is desirable from an operating standpoint to locate the unit between the last press and the driers. However, if it is impractical because of machine room conditions to place the unit in this position, it can be located above the regular press section as shown in the photograph in Fig. 3 of a unit on a Fourdrinier machine.

The unit may be installed in such a manner that the paper machine can be operated with or without the process. The saturant is carried through the process in a closed system and therefore the unit is supplied with feed tanks for the saturant and a single tank for the effluent coming from the saturator press.

Operation

In operation the web leaves the last press of the paper machine and enters the saturator unit between the wire-faced cylinder and the carrying felt. It is then carried down around the cylinder into the saturant and then comes up to the couch where a pressing action takes place which aids thorough saturation. The carrying felt then takes the saturated web through the presses where it is pressed back to its original state of wetness before entering the saturator and then is led into the drier section of the machine.

Fig. 4 is a flow diagram of the saturant as it is carried through the process. In order to describe the saturating cycle more clearly let us assume that we are saturating a web that is to contain a certain percentage of a given material. The saturant for the run is made up in one of the feed tanks and usually flows by gravity from the feed tank to the saturating tank in the unit. In the unit the excess saturant squeezed

Fig. 2.

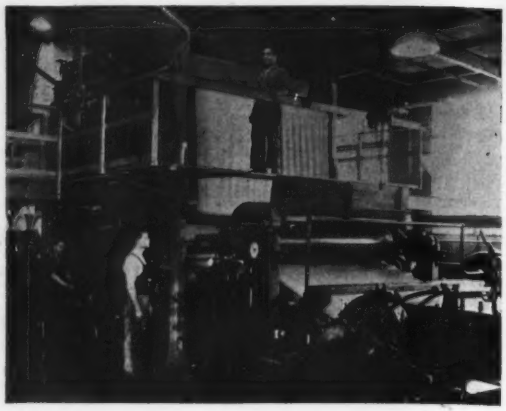

Fig. 3.

out at the couch nip flows back over the carrying felt into the saturator tank. The effluent from the saturator presses flows down into a tank usually located in the basement. This effluent of course is weaker due to dilution by the original water in the web and must be adjusted for re-use. When the first feed tank has been emptied, it is pumped full with the saturator press effluent and is fortified by a stronger saturant which brings it back to its original concentration. In the meantime the second feed tank has been started, insuring a continuous flow to the saturating unit. Relations between concentration of saturant, dilution effects and web content have been worked out so that the residual saturant per cent in the web may be held uniform very accurately.

It is thus seen the wet web process is a closed system and there is practically no loss of material in its operation. In one plant where the process is in operation a careful check is made on the saturator losses and has been found not to exceed two per cent for the year.

As stated before a saturant used with the wet web process is a watery medium which holds a material in solution, dispersion, or in a emulsion. The nearer the fluidity of the saturant approaches that of water, the more readily the web is saturated, and freed of excess saturant.

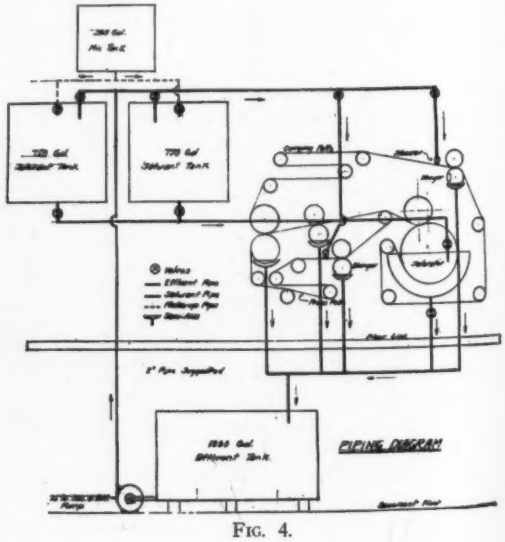

Fig. 4.

A tremendous amount of development has been done in building successful saturants for the process. The successful use of a saturant depends in particular on its stability against pressure which takes place when the saturated web passes through the couch and presses of the saturator. A remarkable piece of work has been done along this line in the stabilizing of latex so that it will not break under pressure, and this is one of the reasons why it works so successfully with this process.

Wet webs are being saturated successfully with latex, shellac, silicate of soda, starches, size, synthetic resins, dyestuffs, salts, and a number of other materials. So it is readily seen that the range of application is very wide for modifying paper for many uses.

The flexibility of the process is further demonstrated in its application of coating materials on either or both sides of the wet web.

An outstanding economy in the use of this process which has been demonstrated in commercial production is the reduction in saturant content necessary for a given degree of fiber modification over both the beater method and the dry saturation method. Economies of 25 to 40 per cent in treating material have been shown. The effect is undoubtedly due to the excellent spreading of the saturating material through the wet web.

Summary

The use of this process provides:

1. A one-pass method for making a modified paper.
2. Effectiveness and economy in the application of modifying materials.
3. Increased range of paper modification at low application cost.

The operation of the process in five different fields of the paper industry to date has indicated that only the surface has been scratched in the application of old and new materials to paper. The handling of the process equipment is paper making itself. It is an added tool for the art which brings out new qualities in old materials and permits the use of new ones, which in turn gives still greater scope for paper in meeting the increasingly difficult commercial demands of today.

Review Of Paper Industry Literature

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C. for 10 cents each. Send currency, not stamps.

Specialties

The Manufacture of Spinning Fibers from Wood. Robert Lippmann. Holz Roh-u. Werkstoff 1, No. 7:270-1 (April, 1938); B. I. P. C. 8:407.—Spinning fibers from wood can be prepared from the bark, edgings, branches, twigs, and billets of all wood species. There are many uses for this crude fiber in insulation, packing, board manufacture, plastics, and even coarse yarns. The outer portions of the stems produce a stronger and more elastic fiber than the center part. Habitat and soil conditions, with the same or different species, likewise determine the quality of the fiber, although the chemical treatment can effect equalization to a certain extent. The wood is reduced to strips less than 1¼ inches in thickness and about 20 to 80 inches in length. The strips are pretreated between press rolls and then cooked under pressure with chemicals. The cooked material is washed under pressure, again put through press rolls, and defibered. It is then put over a carding machine similar to that used for jute-carding, dried, and pressed into bales. The color of the fiber is light brown, but it can be bleached and dyed. The specific gravity is 0.20 to 0.50 g./cc.—C.J.W.

The Manufacture of Vulcanized Fiber. E. Becker. Kunst-stoffe 28, No. 4:83-5 (April, 1938); B. I. P. C. 8:407.—The manufacturing process is described. Old cotton rags are the best raw material. Purified wood pulps are also suitable; their much higher price, however, has so far prohibited their use. The rags are beaten in hollanders to the right consistency, then formed into webs on a paper machine without sizing. Great absorptivity is a prime requisite. The webs are impregnated with zinc chloride, and after removng the excess, wound upon cylinders. The parchmentizing reaction is rather slow, so that many layers can be firmly united upon the cylinder. When a sufficient thickness has been obtained, the vulcanized product is removed from the cylinder by slitting it open and cutting into plates. Careful washing to remove all traces of the zinc chloride is essential. Other parchmentizing agents have been tried, but none proved satisfactory with the exception of sulphuric acid. However, only thin plates can be prepared with the latter; for thicker products zinc chloride must be employed. Vulcanized fiber is rather sensitive to water. Efforts have therefore been made to prepare water-resistant products by surface impregnation. Good results were obtained with Mipolam.—C.J.W.

Preventing the Deterioration of Paper. E. I. du Pont de Nemours & Co. Brit. pats. 466,875, to 466,877.—*No 466,875*—Deterioration of paper due to the action of light and during storage is prevented by treatment with an agent of the general formula $R_1X_1C(NR_2R_3):X_2$, in which X_1 and X_2 are oxygen or sulphur, R_1 is a monovalent hydrocarbon radicle or a metal including ammonium, and R_2 and R_3 are hydrogen or monovalent organic radicles. Thus R_1, R_2, R_3 may be alkyl, alkenyl, aryl, aralkyl or cycloalkyl; and the agents are generally esters of N-substituted esters of carbamic, thiocarbamic, thiolcarbamic and dithiocarbamic acids. *No. 466,876*—Deterioration of paper due to the action of light or during storage is prevented by treatment with a polycyclic phenol such as hydroxydiphenyl, or cyclohexylphenol. *No. 466,877*—The paper is treated with a sulphur compound selected from the group consisting mainly of thiocyanates and thiozoles. Suitable compounds are thiocyanic acid, inorganic thiocyanates, nonvolatile organic thiocyanates such as *p*-hydroxydiphenyl thiocyanate, isopropyl thiocyanate, methylene and ethylene thiocyanate, thiocyanacetone, lauryl thiocyanate, phenyl thiocyanate and alpha- and beta-naphthyl thiocyanate; thiazole, aminothiazole, mer-

captobenzothioazole; and thiophenols, and the salts and esters of aryl sulphonic acids.—A.P.-C.

Crepe-Paper Wadding. A. F. Burgess and Paper Patents Co. Brit. pat. 467,149.—Plies of creped tissue paper to form a wadding are lightly superposed and united by narrow, spaced, embossments, each of small area, which may be formed by a roller having wedge-shaped teeth and may have their length in the direction of the crepe lines.—A.P.-C.

Flat Paper. James Strachan. Paper Maker & Brit. Paper Trade J. 95:TS33-34 (March 1, 1938).—Brief practical directions on how to ensure absence of curling and wavy edges.—A.P.-C.

Moistureproof Coating. A. O. Daller. Brit. pat. 451,696.—Paper or other surfaces provided with a moistureproof coating, e.g., of wax, are attached to one another by means of an adhesive containing a dispersion of rubber. The surfaces are coated with the adhesive, heated to soften the wax and permit the adhesive to penetrate towards the backing, but not to such an extent as to disperse the wax coating, and then brought together. Examples of suitable latex mixes are given.—A.P.-C.

Toilet Paper. H. Eilenberg and V. Feith. Brit. pat. 467,953.—Toilet paper is coated wholly or partly with bole and talcum, e.g., in equal quantities. Starch flour, benzoic acid, salicylic acid, thymol, etc., may also be present, and the paper may be creped or crinkled. The coating may be applied as a paste, e.g., with water, or with an adhesive.—A.P.-C.

Collodion Cotton in the Paper Industry. Kraus. World's Paper Trade Rev. 109:595-602 (Feb. 25, 1938).—A brief description and discussion.—A.P.-C.

Sausage Casing and Apparatus for the Continuous Manufacture Thereof. The Visking Corp. Brit. pats. 475,534 and 475,535 (Nov. 22, 1937).—A tube, such as a casing for edible products, comprises a thin paper strip, etc., having the overlapping margins secured by adhesive, the whole being coated with a cellulose ether. In a preferred method, a long-fibered paper is curved about a longitudinal axis, the margins are pasted together preferably with a cellulose ether, and the tube is then treated with a cellulose ether solution and finished by passage through a precipitating bath or by being dried to remove organic solvent. A suitable precipitating bath for a caustic soda solution of a hydroxyalkyl cellulose contains 5 to 12% sulphuric acid and 10 to 15% sodium sulphate or 10 to 20% ammonium sulphate; after being washed the coated tube is passed through a bath containing glycerin or other hygroscopic agent, and then dried. In the case of a cellulose ether soluble in organic solvents, a plasticizer may be introduced into the coating solution. *No. 475,534* covers an apparatus for carrying out the impregnating and coating process, and *No. 475,535* covers the product thus obtained.—A.P.-C.

Reinforced Paper Suitable for Corner Stay Strips, Etc. American Re-Enforced Paper Co. Brit. pat. 474,537 (Nov. 3, 1937).—A composite reinforced paper comprises a plain and a creped or crimped sheet of paper united by adhesive, e.g., asphalt, in which reinforcing fibers are embedded, the outer surface of the plain paper ply being coated with adhesive.—A.P.-C.

Graphited Paper Stock. Bernard H. Porter. Paper Industry 20:46-47 (April, 1938).—A description of the properties imparted to paper by treatment with colloidal graphite, suggesting new products of interest to the paper trade.—A.P.-C.

Marbled Colored Paper. P. Kersten. Wochbl. Papierfabr. 69, No. 14:299-300 (April 2, 1938).—History of marbled colored paper, including the source of the raw materials, and a short description of its manufacture.—J.F.O.

Are Bank Notes and Draft Forging Recognized At Once. Fritz Loewe. Wochbl. Papierfabr. 69, No. 15:323-24 (April 9, 1938).—The author describes the use of ultraviolet light from the quartz lamp for detecting forgings in bank notes and similar papers.—J.F.O.

Progress in the Field of the Manufacture of Special Papers. Part 3. Safety Papers. A. Foulon. Wochbl. Papierfabr. 69, No. 10:199-201 (March 5, 1938).—Several patents on the subject of safety papers are described; amongst them are: a paper composed of an outer layer of thin sized paper which tears easily upon abrasion and an inner layer of paper which is unsized, a paper with a certain transparent coating so that the markings can be seen by transmitted light and not by reflected, papers treated with oxydation means and other chemicals, and papers in which are inbedded small metallized threads of artificial silk or silk.—J.F.O.

Process For the Manufacture of Safety Paper. Typographisches Institut Giesecke & Devrient A.G., Leipzig. Ger. pat. 648,882 (Feb. 8, 1934).—Oxy-, oxo-, carboxyamine or ortho- or metasulphured amine of the benzols, naphthalins, diphenyls or dinaphthyls as well as their homologues, derivatives, substitution products or salts, are used as safety reagents against oxydation mediums.—J.F.O.

Manuacture of Bag Paper. G. Antonoff. Zellstoff u. Papier 18, No. 3:121-25 (March, 1938).—The author first discusses the importance of paper bags; then the history from its inception in 1876, the shortage of jute during the world war, the air valve, and the present status of the industry; the specifications of the bags for different uses, manufacturing procedure, type of machinery used with complete description from wet end to the winders.—J.F.O.

Fiber Product. Joseph W. Gill assignor to Canadian Gypsum Co., Ltd. Can. pat. 372,155 (March 1, 1938).—A hard, dense, consolidated fibrous lignocellulosic product is prepared by coating a mass of complex cellulosic fibers with a metallic resinate and a fatty-acid pitch, arranging the fibers in heterogeneous interlaced relation and applying compacting pressure to form a closely coherent mass of coated fibers, removing volatilizable constituents by heating at a temperature above the boiling-point of water, then confining the dry mat between heat-conducting surfaces at about 400° F. and having a pressure of not more than 3,000 lb. per sq. in. for not more than 1 hour.—A.P.-C.

Sheet Material from Crude Lignocellulose. Masonite Corp. Belg. pat. 423,758 (Nov. 30, 1937).—Lignocellulose is brought to the plastic state by means of high pressure steam, is dried completely, and is subjected to pressure while it is still very hot (at least 150° C.).—A.P.-C.

Impregnated Fiberboard. Arthur R. Wylie. Brit. pat. 476,327 (Dec. 2, 1937).—Fibreboard for making panels for automobiles, etc., is made from sheets of sized paper formed of a single layer of fibers of nearly pure cellulose disposed substantially equally in all directions and wholly or partly impregnated in a bath of molten asphalt having a melting-point of not less than 140° F. and a penetration point

of not over 22, the impregnation being at such temperature and for a time sufficient to remove substantially all the moisture from the sheet and excess of molten impregnant being removed. The paper may be impregnated in web or sheet form and a resin or pitch may be added to the asphalt.—A.P.-C.

Marbled Board. Fritz Hoyer. Wochbl. Papierfabr. 69, No. 9:177-79 (Feb. 26, 1938).—The author discusses the growth of marbled board and its many uses; the properties of the raw materials, the board should have a clean smooth surface, hard, lay flat and have great strength; the manufacturing conditions and equipment desired; methods for marbling the finished board, and other similar processes.—J.F.O.

The Air Content of Board. Wochbl. Papierfabr. 69, No. 5:95-96 (Jan. 29, 1938).—The air content of board varies from 81 per cent for insulating board to 10 per cent for pressed board for electrical purposes. The factors effecting air content, such as raw material, machine conditions, calendering are discussed.—J.F.O.

Development of the Manufacture of Fiber Boards and the Possibilities of their Manufacture in Austria. H. Bruckmann. Z. Papier, Pappe, Zellulose, Holzstoff 56, No. 7:95-98 (April 15, 1938); B. I. P. C. 8:369.—The development of fiberboard manufacture, especially in the United States and Canada, and the different kinds of boards produced are reviewed. The possibilities of an Austrian fiberboard industry are outlined.—C.J.W.

Machine and Cross Direction in Boards. Kartonnagen- u. Papierwaren-Ztg. 42, No. 15:162-164 (April 15, 1938); B. I. P. C. 8:369.—Machine and cross direction of fibers in boards, using the methods applicable to paper, can only be distinguished in the case of very thin boards. Different simple procedures are described for thick boards. Two strips of equal size are cut from both directions and suspended in water; the machine direction will show the higher absorption of the liquid; it also gives the higher tearing test figure. In the case of very thick plates, bending experiments in dry condition by hand until break occurs will indicate the machine direction by the lower resistance; this test, as well as microscopic investigation of the surface requires a certain experience. Another simple test is to cut two very thin and long strips of identical size from both directions and stand them side by side on the floor. The strip cut from the cross direction will bend more.—C.J.W.

Shipping Containers

Cardboard Containers in the Place of Metal Containers. Papier-Ztg. 63, no. 36:743 (May 4, 1938); B. I. P. C. 8:403.—Different methods for the manufacture of cardboard containers in the form of tubular boxes, pails, or bottles for shipping goods in paste or liquid form are described. The containers are either ready made and then impregnated on the inside with waterproof lacquers, or the conical body is first impregnated, then shaped and provided with a metal bottom and lid. If the price warrants it, the containers may also receive a lacquer coat on the outside for decorative purposes and may be printed. The choice of the lacquer must be adapted to the goods the container is destined to hold; there is no universal lacquer suited for every purpose.—C.J.W.

Loss and Damage Prevention. J. J. Brossard. Fiber Containers 23, No. 4:8, 12, 14 (April, 1938); B. I. P. C. 8:403.—Loss and damage in transportation are just as costly as spoilage or breakage in the manufacturing plant, yet far less precautions are taken to avoid this waste than during any phase of manufacture. The author outlines a plan in which the responsibility for damage during transit is distributed among five different places, the manufacturer of shipping containers, the buyer of these materials, the shipper, the warehousing and the transportation companies; he shows what each of the parties named can do to reduce costly claims.—C.J.W.

The Influence of Humidity on Shipping Containers. W. B. Lincoln, Jr. Fibre Containers 23, No. 4:16, 20 (April, 1938); American Box Maker 28, No. 9:16 (May, 1938); Shears 56, No. 544:36-7 (April, 1938); B. I. P. C. 8:403.—Precautions are outlined for defeating the ill-effects of high relative humidity and high moisture content in the case of fiberboard containers, such as the selection of well-designed and properly made packages, providing correct storage conditions by avoiding extremes of dryness and moisture, and eventual application of surface treatment when containers may be expected to encounter rain or free water from any sources. Tests on fiberboard containers are meaningless unless they are run under standardized moisture conditions.—C.J.W.

Methods of Packing Butter. W. Riedel. Proc. XIth World's Dairy Cong., Berlin 2:152-156 (1937).—Changes in stored butter are discussed with special reference to the use and standardization of German wrapping materials. It is claimed that vegetable parchment is slightly permeable to light and that the treatment of parchment with vegetable extracts which render the paper impermeable to ultraviolet light improves its properties.—A.P.-C.

Pulps

Wood Pulp Qualities and Uses. John S. Bates. Paper-Maker, 95:TS38-48 (March, 1938).—A general discussion giving considerable analytical data on the average physical evaluation of a number of different grades of mechanical and chemical wood pulps.—A.P.-C.

Pulp Refining Apparatus. Raymond C. Benner and Albert L. Ball, assignors to The Carborundum Co. Can. pat. 372,033 (Feb. 22, 1938).—Structural details are described of a refiner having a plug of bonded abrasive with slots, the bonded abrasive forming the contour of the slots being finer than that forming the body of the plug.—A.P.-C.

Purifying Fibrous Material. Georg M. von Hassel. Fr. pat. 821,345 (Dec. 2, 1937).—Fibrous material, particularly cellulosic material, is freed from lignin and other impurities by suspending the fibers in water along with powdered or granular insoluble substances such as chalk, kaolin, kieselguhr, sand or sawdust, drying and then directing them by air or gas currents over a series of screens placed one behind the other and advantageously maintained in contact with a source of electricity.—A.P.-C.

Alkaline Treatments of Pulp and Their Influence on Swelling Characteristics. G. Jayme. World's Paper Trade Rev. 108:TS109-117, 124-130 (Nov. 19, Dec. 17, 1937); 109:TS5-11 (Jan. 14, 1938); Paper-Maker J. 94, TS185-192 (Dec., 1937); 95: TS3-7 (Jan., 1938).—One of the methods used to improve upon the qualities of pulps obtained by the various single-stage cooking processes consists of raising the alpha-cellulose content by alkaline treatments which may be carried out either hot (for com-

paratively long periods and low alkali concentrations) or cold (at much higher alkali concentrations and for a shorter period). In order to determine the colloid chemical properties of such pulps a modified standard method was used, and the data obtained were supplemented by introducing a new conception, that of estimating the specific swelling volume as indicated by the volume of 1 g. of pulp in the swollen state, using only the thickness of a swollen pulp sheet for calculation and neglecting the shrinkage. This test is indicative of change occurring in pulps during beating, bleaching, and alkaline treatment. It showed that purified pulps manufactured by alkaline treatments in the cold differ greatly from those originating from hot treatments. The latter swell less and form the denser sheet, which, however, is still of a looser texture than that observed on sheets made from untreated pulps.—A.P.-C.

The Use of Wood Pulp in the Place of Cotton for the Manufacture of Nitrocellulose. Z. Papier, Pappe, Zellulose, Holzstoff 56, No. 6:73-5 (April 1, 1938); B. I. P. C. 8:373.—Reference is made to experiments on substituting wood pulp for cotton linters in the manufacture of nitrocellulose. The main requirement is a high alpha-cellulose content; the presence of wood gum does not influence the quality of the resulting nitrocellulose; it requires, however, a larger consumption of nitric acid.—C.J.W.

Machinery

Photographic Study of the Motion of Fibers and Water in Flowing Fiber Suspensions. Lamar A. Moss and Earl O. Bryant. Paper Trade J. 106, No. 15:46-57 (April 14, 1938).—A detailed description is given of the technic used and results obtained by means of flash photography using exposures of the order of 0.000003 sec. The effects of various types of slices on the turbulence of flow and fiber orientation were studied.—A.P.-C.

Drum Barking in the Sulphite Industry. Olof Bildt. Svensk Papperstidn. 41, No. 8:261-264 (April 30, 1938); B. I. P. C. 8:367.—Barking experiments with heat-treated wood are described. The logs are heated in a container with water at 95° C. for approximately three hours, then cooled for ½ hour, and barked immediately in a Waplan drum. Floated wood, especially logs lying in water over winter, do not require as long heating and are completely barked in the drums. Railroad-shipped wood may require an after-barking treatment. The paper produced from heat-treated wood had apparently the same properties as the ordinary paper, rosin troubles in the pulp were found to decrease, and no difficulties were encountered with a less readily digested surface layer of the logs or higher screening losses. Another mill reported a 10% loss in the Mullen strength properties of the pulp from heat-treated logs. Further experiments finally revealed that when the heated wood is chipped without previous cooling, a decided loss in strength results, whereas when it is allowed to cool before the mechanical chipping treatment, no such decrease takes place. Several microphotographs are included.—C.J.W.

Fourdrinier Wire of the Paper Machine. Hans Drach. Z. Papier, Pappe, Zellulose, Holzstoff 56, No. 7:85-91 (April 15, 1938); B. I. P. C. 8:387.—The author discusses different methods of weaving Fourdrinier wires, reasons for wire marks, the causes of mechanical wear of wires, damage done to wires during transport, mending torn wires, causes for soiling, and methods of cleaning. In order to arrive at correct figures for wire performance, kind of paper, type of machine, speed of travel, wire number, and output per square unit of the wire surface must be taken into account.—C.J.W.

Cleaning of Wires. H. Postl. Pappen- u. Holzstoff-Ztg. 45, No. 17:187-188 (April 29, 1938); B. I. P. C. 8:388.—Brief directions for cleaning cylinder molds, strainers of hydraulic presses, and Fourdrinier wires are given.—C.J.W.

Three-ply Endless Woven Dryer Felt for Board and Paper Machines. Finnish Paper and Timber J. 20, No. 8:338 (April 30, 1938); B. I. P. C. 8:384.—Reference is made to the advantages of an endless three-ply dryer felt woven from wool and asbestos fibers according to German patent 626,228.—C.J.W.

Speed Regulation of Electrically-driven Paper Machines. Johann Bayer. Z. Papier, Pappe, Zellulose, Holzstoff 56, No. 8:102-105 (April 30, 1938); B. I. P. C. 8:384.—Methods of regulating single and sectional motor drives, as well as the cost of these installations, are discussed.—C.J.W.

Technical Installations of the New Paper Mill in Szentendre (Hungary). R. Smattosch. Z. Papier, Pappe, Zellulose, Holzstoff 56, No. 7:91-93 (April 15, 1938); B. I. P. C. 8:383.—A description of the machinery is given, including kollergangs, hollanders, chests, the paper machine, slitters and winders, power house and water treatment.—C.J.W.

Technical Developments in the Paper Industry. A. Basberg. Papir-J. 26, No. 5:54-58; No. 6:68-72; No. 7:80-83; No. 8:91-93 (March 15, 31, April 20, 30, 1938); B. I. P. C. 8:383.—Recent technical developments are discussed, including beaters, jordans, suction rolls, centrifugal screens, bearings made from plastics, shaking equipment, press arrangements, dryer drainage systems, slitters, drives, etc.—C.J.W.

Cranes and Grabs for Handling Roll Stock. J Breslav. Fibre Containers 23, No. 4:26-28 (April 1938); B. I. P. C. 8:388.—A brief discussion is given of the different types of cranes used in high warehouses for paperboard storage. The advantages of twin hook cranes are illustrated by calculations; the larger the warehouse, the greater the saving in time.—C.J.W.

Supplying Pulp to Paper Machines. Walmsleys (Bury) Ltd., Herbert C. Randell and Harry Lord. Brit. pats. 473,486 and 473,487 (Oct. 14, 1937).—*No. 473,486*—In a paper machine in which a dynamic head of stuff is maintained on the slice by means of a booster pump, the pipe connection between the pump and slice is provided with a pressure relief valve so that the pump can be adjusted to feed slightly more material than is delivered from the slice and maintain a predetermined constant pressure, excess material flowing back through a pipe to the stuff chest. *No. 473,487*—The pulp is conveyed from the screens to the slice by means of a booster pump which is driven in synchronism with the paper machine wire. The pump feeds the slice either directly to give a dynamic head or indirectly through a static head tank.—A.P.-C.

Suction Apparatus for a Paper Making Machine. Irving C. Jennings. Brit. pat. 475,691 (Nov. 24, 1937).—The apparatus consists of a perforated rotatable suction roll, a stationary suction box mounted therein in contact with the operating surface of the rolls, means effective to maintain a vacuum within the suction box and means to apply a sealing vacuum at both longitudinal sides of the box.—A.P.-C.

Preventing of Foaming in Paper Manufacture.

Pattilloch Processes, Inc. Brit. pat. 473,643 (Oct. 18, 1937).—The foam formation in fiber-water mixture is controlled by adding a soluble aluminate or sodium metasilicate to bring the pH to a value between 4.6 and 5.6. If the pH value is greater than 5.6, it is lowered below 4.6 by adding acid and then increased to the desired value by means of aluminate or metasilicate.—A.P.-C.

Cylinder Machine Formation. Philip H. Goldsmith. PAPER TRADE J. 106, No. 18:35-44 (May 5, 1938).—The "counterflow" and "overflow" types of vats are briefly described, and a typical flow diagram of each is given. Some basic principles are stated, and the chief vat variables are discussed. The functions and requirements of the component parts of any vat system are stated. Some general opinions relating to cylinder formation are advanced. The basic factors which need to be considered in designing a vat for higher speeds than those in use at present are reviewed.—A.P.-C.

Screen Room Practice in Kraft Mills. John H. Noble. PAPER MILL 61, No. 18:16-18 (April 30, 1938).—A brief discussion of present-day practice.—A.P.-C.

Horizontal Dual Presses Operating on Numerous Grades of Paper. C. E. Macklem. Paper Mill 61, No. 9:117-118, 134 (Feb. 26, 1938).—A brief outline of the results which have been accomplished from the various installations of the Beloit horizontal dual press on a wide variety of papers.—A.P.-C.

Calendering Machines. Etablissements Schaeffer & Cie. Brit. pat. 466,318.—Progressively increasing pressures are exerted in the direction of travel of paper in a horizontal or vertical calendar, by primary presses and secondary presses on the machine framework.—A.P.-C.

Cutting Paper. K. Fomm. Brit. pat. 468,708.—In a machine for cutting piled sheets of paper, cardboard, etc., a change-speed gear is arranged between the driving shaft, which rotates at a constant speed, and a machine elément, e.g., crank-shaft, for operating the cutter beam.—A.P.-C.

Rubber Design Rolls for Paper Finishing and Decoration. J. B. Shaughnessy. PAPER INDUSTRY 20:156 (May, 1938).—A very brief outline of the advantages of paper finishing and decoration on the machine by means of rubber design rolls.—A.P.-C.

Paper Cutting and Machine for Cutting Paper. John Kehm. PAPER MILL 60, No. 39:15-16 (Sept. 25, 1937).—A brief discussion.—A.P.-C.

Save-All. R. E. Campbell. Brit. pat. 478,434 (July 22, 1936).—For the recovery of fine paper fiber from mill water, the cylindrical surface of a rotary drum is composed of a number of longitudinal channels covered with filter medium. The drum is partly submerged in prefilt, and when a channel containing filtrate is lifted to the crown it discharges freely by gravity through a stationary conduit, producing barometric suction.—A.P.-C.

Mechanized Paper Sorting Table. Wochbl. Papierfabr. 69, No. 12:259 (March 19, 1938).—Short description of a sorting table which shows a saving in labor and time.—J.F.O.

Shaft Packings with Collars Made of Artificial Material (Buna). Wochbl. Papierfabr. 69, No. 16:343-44 (April 16, 1938).—By means of several illustrations the author describes the packing and its application.—J.F.O.

Pneumatic Conveyors and Their Use in the Paper and Pulp Industry. Erich Lotz. Wochbl Papierfabr. 69, No. 17:363-65; No. 18:381-83 (April 23, 30, 1938).—Applications of pneumatic conveyors in the paper and pulp industry are described, such as, conveying broke and old paper which has been made into crumbs, conveying ground wood, wood chips, and stock from kollergangs. The various types of air compressors, the piping and other equipment are described.—J.F.O.

Process and Device for Screening Fibers Suspended in Water, Especially Paper Stock. J. Strindlund, Tofte. Ger. pat. 650,743 (April 9, 1935).—The fibrous suspension is first passed through a fiber recovery device where a part of the long fibers is removed by means of wires or knives.—J.F.O.

Device for Changing Wires on Paper, Carton and Similar Machines. Maschinenfabrik A.G. vorm. Wagner & Co., Herischdorf. Ger. pat. 649,566 (Feb. 6, 1936).—The tube rolls are fastened to a piston which moves sideways within a hollow cylinder.—J.F.O.

Drying cylinder drive for paper machines. Maschinenfabrik A.G. vorm. Wagner & Co., Herischdorf. Ger. pat. 650,406 (April 27, 1935).—A drive which is cheaper and more simple in operation is designed for individual drives for the top as well as the bottom cylinders.—J.F.O.

Device for fastening the knives of multiple circular cutters on its shafts by means of clamps. K. R. Dienes, Vilkerath, Ger. pat. 650,464 (March 17, 1935).—An eccentric acting key is used as the clamping means.—J.F.O.

Process and Centrifuge for the Screening of Fibrous Suspensions. Erkensator G.m.b.H., Duren. Ger. pat. 650,523 (May 30, 1934).—System with several units so designed to prevent the lighter impurities from coming together with the clean stock.—J.F.O.

Screen, Especially for Screening Chips From the Chipper in the Process of Cellulose Manufacture. W. Bezner, Ravensburg. Ger. pat. 650,690. (Sept. 13, 1935).—J.F.O.

Process for Joining the Ends of a Wire Web, Especially for Paper Machines. H. Kurtz, Reutlingen. Ger. pat. 650,011 (June 16, 1934).—Method of cutting the ends of the wires and welding them together.—J.F.O.

Comparison Between Various Save-alls. K. Lindovsky. Papier-Fabr. 35, No. 45:429-32 (Nov. 5, 1937).—The author describes the actual operation of a cone-shaped save-all, the size of the save-all, the kinds of paper used and the performance or efficiency of the save-all. An Adka save-all was installed in place of the above and the operation of this was compared with the cone-shaped save-all. The Adka save-all should be operated under normal conditions, that is, it should not suddenly be over-loaded. The consumption of chemicals is noted and the efficiency. The quality of paper is improved because the finer fibers and fillers were now returned to the sheet of paper. The installation of the Adka save-all fullfilled all expectations.—J.F.O.

Process and Device for Changing the Width of Webs of Paper and Similar Materials, Especially for Longitudinal Creping of Paper. Zellstofffabrik Waldhof, Mannheim Waldhof. Aust. pat. 149,882 (Feb. 15, 1937).—The web to be treated must travel over a part of the circumference of a rotating body with bent axis.—J.F.O.

Non-Fibrous Raw Materials in the Paper Industry*

Developments in 1938

By H. H. Hanson, Chairman [1]

Again in 1938 the production of pulp and paper reached a new level, exceeding even the 1929 record. This achievement, however, did not mean that 1938 was a satisfactory business year. Prices apparently were decreasing continually, and never reached even a stable level. This condition is entirely new in the industry, for never before has continued high production ratio failed to result in some upward movement in prices.

The increased production, of course, was reflected in a greater non-fibrous raw material consumption, but again, one phase of this production, sulphate pulp, remains as the most important factor influencing the use of chemicals in the industry. It is estimated that last year's production exceeded 2,500,000 tons.

In addition to pulp production, new chemical uses contributed in a small measure to increased consumption.

Both domestic production and imports of salt cake showed a decided increase through the year. As manufacturers began to realize that they had reached the limit of strength characteristics of the usual pulp, sulphate began to compete in the white field, leading to substantial increases in lime and chlorine consumption. New applications of soda ash in the kraft industry became adopted. Special papers resulted in more extensive use of starch. The value of plasticizing agents continued to be reflected in increased consumption. Generally in the industry, the use of non-fibrous raw materials continues to mount year by year.

Salt Cake[2]

Among non-fibrous raw materials, the one that seemed of greatest interest for the past year was sodium sulphate, or as it is commonly called, salt cake.

Until an economical substitute is discovered, salt cake will remain of paramount importance to producers of kraft pulp. There is, however, a mutuality of interest in that the producers of salt cake must rely on kraft as its chief outlet. In 1935 a Tariff Commission report estimated that approximately 74 per cent of all salt cake consumed in the United States was used by the sulphate pulp industry. In 1937 probably 85 per cent of all salt cake was consumed by the sulphate pulp industry.

In 1927 the total kraft pulp production of the United States was 603,000 short tons, in the processing of which approximately 106,000 short tons of salt cake were consumed. In 1937 we produced 2,184,000 short tons of kraft pulp and consumed in the making thereof approximately 400,000 tons of salt cake. Amazing as is this growth of approximately 400 per cent in the consumption of salt cake, it is dwarfed by the percentage increase of imported salt cake. In 1927 we imported for all purposes 11,000 short tons of salt cake; in 1937 this figure had grown 2000 per cent to 220,000 short tons.

The extremely rapid growth of imports was brought about by the shifting of our kraft pulp industry from the northern states to the South. Before the exodus South, the by-products of northern chemical mills was the chief source of salt cake, but due to prohibitive freight rates it is impossible to have this cake shipped considerable distances. Foreign producers, having a cheap ocean haul, have usurped a large part of the domestic market. The Department of Commerce reports that our 1937 salt cake came from the following sources:

Germany	182,533 tons
Chile	17,123 "
Canada	7,797 "
Belgium	6,780 "
Netherlands	5,273 "
Albania	672 "

or a total of 220,178 tons, of which 197,400 tons entered seven south Atlantic and Gulf custom districts. The demand for salt cake during 1937 was so great that many mills visioned a possible shortage and were induced to enter into contracts at prices above those existing the year previous. However, the reduction in industrial activity in the United States during 1938 left its mark on the kraft industry also. During the first ten months of 1938 we imported approximately 100,000 tons of salt cake, about 50 per cent of the amount imported during the comparative period of 1937.

In 1937, when the apparent consumption of salt cake in this country was about 480,000 tons, 261,000 tons were of domestic origin and came from various sources. Between 75 and 80 per cent was produced from the chemical by-products, manufactured predominantly, in conjunction with hydrochloric acid. As stated above, most of this cake is not available to southern kraft pulp manufacturers because of unfavorable freight rates.

Natural salt cake is becoming of growing importance, but at present accounts for only about 25 per cent of the total production. There again the chief difficulty is a geographical one, in that our huge deposits of natural cake are far removed from the points of consumption. It has been estimated that should salt cake prices rise above $16.00 c.i.f. Atlantic or Gulf ports it will be profitable to work extensively some of our many natural deposits.

The price of salt cake on contract at the beginning of 1938 was about $15.00 Atlantic seaboard for imported grades. Of recent months it has been pos-

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[1] Chairman TAPPI Non-Fibrous Raw Materials Committee; President, W. C. Hamilton & Sons, Miquon, Pa.

[2] See list of contributors at the end of this report.

sible to obtain desirable grades of cake at less than $12.75 Atlantic seaboard for delivery over the year 1939.

Soda Ash

In 1938 soda ash disposition to the pulp and paper industry followed the business trend. The price of soda ash remained constant during the year and no changes have been announced for 1939.

There are several new uses, and suggestions have been made during the year which might tend to increase the use of soda ash in the pulp industry. The use of fibrous annuals for the manufacture of cigarette paper has become effective during 1938, and this process is undertaken with soda ash and caustic soda.

In the kraft pulp industry, soda ash is finding increased use in the green liquors to obtain a lower sulphidity ratio. In insulating board manufacture, the use of alkali for steeping the wood is increasing for producing a brown mechanical pulp. In Russia and Finland, highly resinous woods are being successfully used for the production of newsprint by using a 2 per cent soda ash solution in the grinder pit, and in the south a soda ash solution is proposed in the showers on the stone when producing mechanical pulp to prevent glazing effect and to keep the stone at a high productive rate.

There have been some suggestions for using sodium hypochlorite in the bleaching of pulp. The use, however, is not marked but it has certain definite advantages in producing a better quality pulp with low ash content. In this respect soda ash can be used, especially for producing highly active bleach solutions.

Small quantities of the chemical continue to be used by mills which prepare their own rosin size.

Caustic Soda

A decrease in soda pulp production in 1938 resulted in a lower consumption of caustic soda. Apparently this was general in most branches of industry as the following table indicates:

	Pulp and Paper	*Total*
1937—Short Tons	48,000	882,000
1938 " "	35,000	784,000

In addition individual mill production amounted to 17,000 tons per year.

This decline was due, in most instances, to decreased production.

Of considerable interest in this field is the fact that in the last several years chlorine demand has grown out of proportion to caustic requirements, leading to extensive investigations of methods of producing chlorine without caustic soda. This condition still exists with even a greater discrepancy.

In the manufacture of strawboard, caustic soda still continues to replace soda ash. A pulp made from caustic digestion of soy bean stems can be mixed with straw pulp to form strawboard. The pulp is strong and fibrous and is well suited for straw pulp blending.

Technical trends in connection with the mercury cell were evident during the year. Also extensive investigations have been carried out concerning the caustic effect on bleaching of pulp.

Lime

The total lime consumed in the paper industry approximates 15 per cent of that sold in the country. With the developments that have taken place in the chemical pulp industry in the Southeast, lime manufacturers should realize a substantial increase in the market, due to the shifting of the industry.

With the favorable conditions of obtaining raw material, we shall examine the lime market as it exists at the present time. In 1924 we found 16 mills and in 1937, 30 mills, an increase of 14 mills in a period of 13 years. Only a few years ago sulphite and soda mills required lump lime, and the batch causticizing method used gave a ratio of approximately 500 pounds of fresh lime per ton of pulp produced. At the present time, with the continuous causticizing system, this figure has been reduced to 65 pounds per ton of pulp. Therefore it can be readily seen that even with the increased number of mills, lime consumption has not changed as much as one might expect.

The most important development in the industry during 1938 was the strike in the Missouri field, the principal effect of which was to eliminate approximately one thousand tons of lime per day from the total production of the industry, for a period of five months, June through October. While this strike effected only a few of the manufacturers in the district, it definitely strengthened lime prices in the Middle West.

Prices on all grades of lime were generally weak the first part of the year, but strengthened considerably through the latter months, even after the manufacturers in the Missouri strike district resumed production in the Fall. The encouraging industrial outlook for 1939 should mean further improvement from the extremely low levels of the past several years, at least to more reasonable levels.

Transportation saw very little change during the year the only important development being minor adjustments further extending the benefits of dual rates. These extensions were effective in most sections. Some increase in the use of covered hopper bottom cars for large volume bulk shipment of lime was seen.

With the exception of increasing interest and further refinements in multi-phase bleaching the year saw no new uses for lime in the paper industry. Hydrated lime is used for neutralizing excess acid in this process, and the lime for the purpose must not only be high in calcium content, but extremely clean and free from grit and other foreign substances.

The latest published figures by the Bureau of Mines show total lime consumed by the paper industry in 1937 at 447,728 tons. This lime was valued at $2,892,552.00 or an average of $6.46 per ton. This figure includes 32,995 tons of hydrate valued at $246,062.00 or an average of $7.45 per ton. Figures for 1938 are not available at this time.

In conclusion may it be emphasized that the high calcium limestone deposits in the Southeast are sufficient not only to take care of the present requirements, but any increase developing from the geographical change in the pulp and paper industry.

Chlorine

During 1938 the consumption of chlorine in pulp mills was not characterized by any new uses but the old ones continued. The increased demand for bleached kraft pulp resulted in a substantial increase in chlorine consumption over 1937, and as the pulp is destined to compete in the sulphite field, greater utilization of chlorine is expected.

There appeared renewed interest in the treatment of kraft mill stack gases with chlorine. The control

of paper mill slime with chlorine or chloramine has continued and the practice may now be considered standard.

The uses of the gas outside of the industry increased, and some of these may presently be applicable to pulp and paper manufacture. For instance, it has been found that the addition of small amounts of chlorine gas to air used to separate grease from sewage greatly increases the amount of grease recovered. This factor cannot be readily explained by formulae, but the fact remains that the gas is effective in this connection. Such conditions may be of interest in pulp and paper mill waste treatment.

Alum

At the present time approximately one-third of the alum produced in this country is utilized by the pulp and paper industry, and according to recent estimates, the consumption in 1938 did not differ appreciably from that in 1937. The general opinion concerning the conditions of markets on both the commercial and iron free grades was that their prices were substantially lower than 1937 levels.

In some instances alum is being replaced by sodium aluminate, allegedly for improved sizing and machine conditions. This condition is of minor import at present, but presents definite possibilities.

During the year considerable interest was evident in a less expensive form of alum known as "activated alum," which has been used for a number of years in water purification. This compound contains substantially greater amounts of water insoluble constituents than commercial alum. (From 7 to 12 per cent by weight). These insolubles are claimed to possess active properties as nuclei in floc formation.

The compound has been adopted by several paper mills, which report greater alkalinity absorption than with regular alum. Control studies are being made to determine if this alleged superior characteristic is one which will be advantageous to those mills producing a product in which the extra insolubles will not be objectionable.

Rosin

Production of rosin exceeded all expectations in spite of a so-called conservation program, designed to curtail production. This was due in great degree to weather conditions which were much better than average, and to abundant labor supply which permitted efficient operations.

Prices throughout the past season have been influenced by artificial conditions due to a loan program under which the United States Government authorized loans on medium grades of rosin at $5.75 per unit. Due to this plan, tremendous quantities of rosin were pledged for loans and were kept off the market. In spite of this, prices on the open market have stayed below the loan value.

Thus we start the calendar year with tremendous reserve supplies which, however, are largely in Government hands, and on which they have loaned money in excess of the rosin market prices of the last few months. The industry expects a loan program for next year, and a more strict conservation program, both being intended to bring about higher prices.

Evidently artificial influences will continue to exist during 1939, the economic laws of supply and demand being at least partially suspended. Under such conditions, it is impossible to prophesy what may result.

Dry rosin size has apparently become permanent with an appreciable increase in consumption. There were no new developments in the field during the past year.

Starch

The general opinion is that the pulp and paper industry is consuming more starch each year. Part of this is due to new uses such as machine coating, and to the fact that certain changes in paper properties and application lead to the use of starch. The extensive research work which is continually taking place is expected to result in increased consumption also.

In the corrugated container field, starch has largely replaced silicate of soda. A new development consists of a vegetable base product to replace animal glue for gummed tape.

The greatest changes during the year were the use in machine and brush coatings.

Clays

The outlook for 1939 in regard to clay is favorable. The South is rapidly becoming a large factor in the consumption of clay and this fact should offset the lost tonnage in the North due to use of calcium carbonate and similar fillers. The southern states have an abundant supply of clay and prices are not expected to change unless a war occurs. In this event prices would rise due to foreign shipments being delayed.

Many mills have investigated domestic clays that have in the past used the English china type, so that they will be prepared in case of international dispute. Generally speaking, clay tonnage is not expected to increase to any great extent, due to the growing use of other types of filler.

Silicate of Soda

The use of silicate of soda in the paper industry has continued steadily without important change in trend over the past several years.

The value of silicate of soda in the paper mill beater continues to be recognized and the volume of silicate consumed in this use remains materially unchanged.

Some volume of silicate is used in de-inking processes, but no substantial change in volume of silicate for this use is anticipated at this time.

The sodium meta-silicates have proved their value as general purpose cleaners in the detergent field. These silicates are now being found useful in the paper mill. A mixture of meta-silicate with caustic soda produces whiter rags when used in cooking rag stock. The detergent properties of sodium meta-silicate are useful in the washing of beaters after the use of rosin size or coloring pigments.

The adhesive silicates continue to receive attention. The unmodified adhesive silicates, as well as those modified by the addition of inert fillers, have been improved to provide a fiber shipping container of unexcelled quality, produced with economical, high speed operation.

In the spring of 1938 research investigation was initiated to examine the strength characteristics of corrugated paper board and to determine the part which the adhesive contributes to the strength of the finished board. The results of this work are extremely interesting and the complete data will soon be available for distribution to the industry.

No pronounced changes are noted in the prices of silicates of soda.

Dyestuffs

The dyestuff market has been about the same in 1938 as in 1937, and prices have remained firm. Where changes did occur, there has been a tendency to somewhat lower prices.

The increased production of kraft in the South may bring forth a greater use of dyes next year, although we notice a tendency on the part of box manufacturers to do their own coloring with the use of surface coloring inks.

There has been no outstanding technical development in the advocation of dyes during the past year.

Plasticizers

We are again able to report that the volume of plasticizing agents consumed by the industry during 1938 shows an increase over that for 1937. Production of standard plasticized items, such as, glassine, greaseproof, vegetable parchment, waxing stock, and, plain and fancy coated papers, has steadily increased.

To these standard plasticized grades have been added various specialty papers where the use of hygroscopic agents has been found beneficial and, in some cases, indispensable. These include wet strength papers having cloth-like properties, printing papers, such as offset and special roto-gravure sheets, special bonds, and also certain papers to be used on high speed machines where static electricity is a problem.

There has been very little recent change in plasticizing procedures, although existing methods have been refined, most notably in the case of spray applications where distribution and retention have been improved.

Opinions differ as to the relative efficiency of the various plasticizers on the market. It is, perhaps, generally agreed that glycerine will give more softness than any other agent. Glycerine however, has several bad features among which are its high cost, excessive moisture absorption and fugitive nature. Some mills claim that di-ethylene-glycol has better qualities than glycerine, but this opinion is not generally held.

Probably the greatest consumption of plasticizers is that of sugar products—invert sugar, corn sugar and corn syrup. These materials have relatively good softening powers, are inexpensive, and do not absorb as much moisture as glycerine at high humidities. They are superior to glycerine for promoting transparency, as in super-calendered glassine. A moderate increase in consumption during the year was indicated.

The majority of mills feel that best results are obtained by using mixtures of one or more of the sugars and glycerine. The general opinion is that invert sugar has more softening power than either of the other two products, although corn sugar or syrup is often used to modify a mixture of invert sugar and glycerine.

For some plasticizing requirements it is found that the sugar products will serve satisfactorily with little or no glycerine present. Where more softness is needed, recent results have indicated that a mixture of equal parts invert sugar and glycerine gives softness equal to that produced by pure glycerine.

A number of other materials have received some attention as possible plasticers but have not been markedly successful as yet. Among these are: sorbitol, and a modified sorbitol known as Yumidol; mixtures of sugars and hygroscopic mineral salts, lactic acid and sodium or calcium lactates. The possibilities of this group of agents have not, perhaps been thoroughly explored.

Materials such as sulphonated castor oil, while roughly classed as plasticizers, have little softening power and are used mainly in the coating industry as foam killers and spreading agents. The sugar syrups, both invert and corn, have been displacing oils to some extent in this field.

Price trends have, on the whole, been downwards. A comparison of current prices with those for the same period of 1937 shows:

	1937	*1938*
Glycerine, lb.	14-16c	12-12½c
Di-ethylene-glycol, lb.	22c	16c
Invert sugar, lb.	4½-5½c	4½-4¾c
Corn sugar, lb.	3-4½c	3½-3¾c
Corn syrup, lb.	3-4½c	2¾-3c
Sorbitol, lb.	19c	15½-16c
Sulphonated castor oil, lb.	8-12½c	6¼-11c

Recent development of processes for making synthetic glycerine by fermentation and other means have promised to hold a roof over the price of natural glycerine from soap manufacture. Such synthetic glycerine is not known to be on the market as yet, but always remains a possibility.

Titanium Pigments

At the present time the value of titanium pigments in the paper industry is generally realized and indications are that their consumption will increase from year to year. This should be particularly true in 1939, since the price of titanium dioxide has been reduced $40.00 per ton. There is an increased use in high grade book papers and other types where the price formerly prohibited its use. In conjunction with this, the South is evidencing activity in white papers which will open up a new market for the pigments.

Zinc Sulphide Pigments

A marked improvement in technically pure zinc sulphide for the paper industry is a development of the past year. Opacity, color and brightness have been stepped up by considerable changes in the manufacturing process of the industry's biggest supplier. These same improved qualities also have been extended to the zinc sulphide-barium pigments used in various grades of paper. There have been no increases in price—in fact, technically pure zinc sulphide has been reduced ½c per pound, and now sells for 7⅞c per pound in 20 ton lots packed in bags. Consequently, zinc sulphide pigments offer still better values to paper manufacturers.

Of interest is the comparatively new and broadening application of zinc sulphide pigments among paper manufacturers who have found it advantageous to cut their costs by replacing a portion of their requirements of the higher priced opaque pigments with zinc sulphide.

Manufacturers of print papers express the belief that their trend toward improved opacity, color and brightness will continue. Products of board manufacturers are exhibiting the same improved appearance. Consequently, the increasing use in these lines of the four distinct types of zinc sulphide pigments is indicated.

The zinc oxide pigments continue as a lesser factor, inasmuch as their use has been confined largely to coating formulas.

Enzymes

1938 showed an increase over 1937 in enzyme consumption of approximately 40 per cent. The expectations are that this will continue due to research in

the adhesive field and increased surface treatment. Enzymes have been developed to the point where they are readily manipulated, permitting the mill to utilize nearly any desired type of starch.

An increase in machine coated papers is anticipated in 1939, which, in the use of special fillers, will lead to the enzyme conversion of cheap starches which carry high amounts of the coating materials.

No price change in 1939 is anticipated.

Wax Sizes

There has been some increase in the consumption of rosin wax sizes for internal sizing of papers and boards in 1939. Interest on the part of mills in improving the finish of their products, especially those that are used for printing, is the chief factor in maintaining the demand for special sizes.

One special development is the production and use of a rosin wax size entirely free of soap. This size has been most successful in products such as insulating board which requires considerable time for drying. The principal advantages of this type of size are high efficiency, a minimum of discoloration, and low alum consumption.

Interest has been still keener in wax emulsions for surface applications, particularly in the board field. Practice appears to be growing more common to apply wax emulsions usually in combination with starch at the calenders to improve finish, increase resistance to penetration of printing inks and to improve resistance to scuffing.

There are available for the purpose a wide selection of emulsions varying in stability from those completely stable to chemicals, to dispersions which are highly sensitive to acids and alkaline earth compounds. The former are generally preferable where the prime considerations are finish, printing ink resistance and scuff resistance while the less stable emulsions are favored when high water repellence is required.

A use of wax that has undergone considerable development during the past year is in connection with laminating paper and boards. An amorphous type of petroleum wax may be used and there are also available for the purpose specially prepared waxes.

These waxes are strongly adhesive, give good bonds, are water proof and are highly resistant to moisture vapor transfer. They are flexible so that laminated box board may be scored, creased and formed into boxes without rupturing the film, and moist foodstuffs are said to keep fresh in such boxes many times as long as when packed in ordinary boxes.

The wax markets have held fairly steady through the year. Scale wax has shown the highest price fluctuation. At the beginning of the year it was selling at $2.85 per hundred weight in barrels New York dock. By May it had fallen to $1.85 and risen to $2.35 in August. Since August the price has been practically stationary. Refined paraffin amp 123-125 F held between $4.00 and $4.50 per hundred weight during the first half of the year, but during the last five months of 1938 it has been steady at $3.75. Amorphous waxes have undergone no changes in price throughout the year.

Contributors to Report

Salt cake	B. I. Sheldon, Gottesman & Co., New York City
Soda ash	Herbert Philipp, Solvay Process Co., Syracuse, N. Y.
Caustic soda	" " " " " "
Lime	O. L. Cook, Lehigh Lime Company, Chicago, Ill.
	W. F. Swan, Standard Lime & Stone Co., Baltimore Md.
Chlorine	S. W. Jacobs, Electro Bleaching Gas Co., New York City
Alum	H. J. Heffernan, Monsanto Chemical Co., Boston, Mass.
	L. L. Hedgepeth, Pennsylvania Salt Manufacturing Co., Philadelphia, Pa.
Rosin	J. C. Dieffenderfer, Hercules Powder Co., Wilmington, Del.
	A. H. French, American Cyanamid and Chemical Co., Valdosta, Ga.
Starch	J. Goldstein, Stein Hall Co., New York City
Clays	R. E. Harter, R. T. Vanderbilt Co., New York City
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Dyestuffs	C. F. Schauman, E. I. Du Pont & Co., Wilmington, Del.
Plasticizers	N. R. Pike, Nulomoline Company, New York City
	J. F. Leete, Industrial Sugars Corp., Chicago, Ill.
	J. H. Fritz, National Oil Products Co., Harrison, N. J.
Titanium Pigments	R. E. Harter, R. T. Vanderbilt Co., New York City
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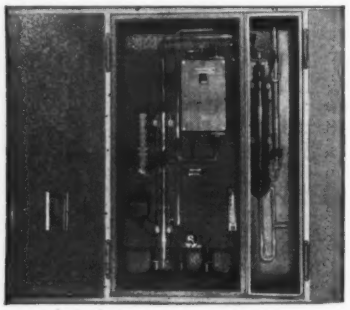
Enzymes	R. E. Harter, R. T. Vanderbilt Co., New York City
Wax sizes	R. W. Kumler, Bennett, Inc., Wilmington, Del.
	J. H. Fritz, National Oil Products Co., Harrison, N. J.

Micromax SO_2 Recording Equipment

Cell corrosion and acid mist, the former obstacles to successful SO_2 measurement, are eliminated in the new Micromax recording equipment made by the Leeds & Northrup Company, 4934 Stenton avenue, Philadelphia, Pa. With it, accurate and reliable records are now being obtained. Tested and proved in the field, it marks a significant advance in the problems of efficient SO_2 production and meets, in every respect, the Leeds & Northrup standards of reliability, longevity and accuracy.



Using a standard, glass, measuring-cell assembly, in which corrosion and catalytic action are definitely avoided, it holds its calibration continuously. Sulphuric acid mist, a former cause of calibration errors, is removed by an efficient filter. Cell assembly operates for weeks without attention.

Changes in humidity no longer affect calibration . . . lag is minimized, as it is now possible to draw the continuous gas sample from the flue immediately after it leaves the burning chamber.

Freed of sulphuric acid mist and SO_3, the gas is easily measured with the improved thermal-conductivity equipment long known to be basically sound and already used so successfully in the measurement of CO_2. The circuit is operated entirely by alternating current without batteries, rectifiers, etc. An application of the a-c Wheatstone bridge, it has all the superiorities inherent in balance-type measurements.

New Paper Mill for Peru

WASHINGTON, D. C., March 15, 1939—The manufacture of paper by a recently formed company located at Supe, Peru, is expected to get underway during the latter part of 1939, according to reports from the office of the American Commercial Attache, Lima. Sugar cane bagasse and waste paper mixed with imported wood pulp are expected to be the principal paper base stocks utilized.

Imports of Paper and Paper Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard, Wallboard, Cigarette Papers, Sulphite, Kraft and Ground Wood Pulp.

NEW YORK IMPORTS

WEEK ENDING APRIL 1, 1939

SUMMARY

Cigarette paper.....1405 cs., 8 cs. covers
Wall paper .....22 cs.
Paper hangings.....26 bls., 7 cs.
Newsprint .....815 rolls, 8 bls.
Printing paper.....55 rolls, 52 cs.
Wrapping paper.....1,156 rolls, 5 bls., 2 cs.
Filter paper.....8 cs.
Filter material .....25 bls.
Drawing paper.....13 cs.
Surface coated paper.....139 cs.
Fancy paper.....2 bls., 1 cs.
Transfer paper .....22 cs.
Decalcomania paper.....20 drums, 2 pckts., 1 cs.
Tissue paper.....65 cs.
Tracing cloth .....44 cs.
Writing paper.....6 cs.
Cellulose paper.....3 cs.
Stencil paper .....4 cs.
Miscellaneous paper.....61 cs.

CIGARETTE PAPER

Braunstein Freres, Inc., *Pr. Roosevelt,* Havre, 140 cs., 8 cs. covers.
Champagne Paper Corp., *Alioth,* Havre, 786 cs.
American Tobacco Co., *Alioth,* Havre, 212 cs.
De Manduit Paper Corp., *Alioth,* Havre, 2 cs.
H. H. Strauss, *Pipestone County,* Bordeaux, 11 cs.
De Manduit Paper Corp., *Normandie,* Havre, 2 cs.
Braunstein, Freres, Inc., *Normandie,* Havre, 66 cs.
De Manduit Paper Corp., *Manhattan,* Havre, 186 cs.

WALL PAPER

United Wallpaper Factories, Inc., *Nankai Maru,* Osaka, 11 cs.
A. L. Diament, *Pipestone County,* Havre, 1 cs.
American Express Co., *Manhattan,* Havre, 9 bls.
J. E. Bernard & Co., *Manhattan,* Havre, 1 cs.

PAPER HANGINGS

W. H. S. Lloyd & Co., *American Trader,* London, 26 bls., 7 cs.

NEWSPRINT

Jay Madden Corp., *Pr. Roosevelt,* Finland, 8 bls.
Jay Madden Corp., *Manhattan,* Finland, 200 rolls.
Parsons & Whittemore, Inc., *Svaneholm,* Gothenburg, 238 rolls.
Nolan Bowmall & Co., Inc., *Svaneholm,* Gothenburg, 143 rolls.
Jay Madden Corp., *Svaneholm,* Kotka, 134 rolls.
Wilkinson Bros. & Co., Inc., *Svaneholm,* Kotka, 100 rolls.

PRINTING PAPER

Dingelstedt & Co., *Noordam,* Rotterdam, 55 rolls, 32 cs.
——, *Alex van Opstal,* Antwerp, 19 cs.
H. Reeve Angel & Co., Inc., *Ausonia,* London, 1 cs.

WRAPPING PAPER

Jay Madden Corp., *Pr. Roosevelt,* Finland, 470 rolls.
Japan Paper Co., *Black Osprey,* Antwerp, 2 cs.
Jay Madden Corp., *Manhattan,* Finland, 686 rolls, 5 bls.

FILTER MATERIAL

Max Joseph, *Black Falcon,* Rotterdam, 25 bls.

FILTER PAPER

——, *Noordam,* Rotterdam, 3 cs.
Fisher Scientific Co., *Manhattan,* Hamburg, 1 cs.
H. Reeve Angel & Co., Inc., *Ausonia,* London, 4 cs.

DRAWING PAPER

Keuffel & Esser Co., *Manhattan,* Hamburg, 13 cs.

SURFACE COATED PAPER

Gevaert Co., of America, *Black Osprey,* Antwerp, 139 cs.

FANCY PAPER

C. A. Haynes & Co., *Aquitania,* Southampton, 1 cs., 2 bls.

TRANSFER PAPER

Fuchs & Lang Manfg. Co., *Manhattan,* Hamburg, 22 cs.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., *American Shipper,* Liverpool, 16 drums, 2 pckts (duplex), pckt (simplex).
B. F. Drakenfeld & Co., *Scythia,* Liverpool, 1 cs., (simplex), 4 drums (duplex).

TISSUE PAPER

Corn Exchange Bank Trust Co., *Kinka Maru,* Kobe, 10 cs.
Meadows Wye & Co., *American Shipper,* Liverpool, 1 cs.
B. F. Drakenfeld & Co., *Scythia,* Liverpool, 5 cs.
Dingelstedt & Co., *Scythia,* Liverpool, 6 cs.
Tricolator Co., *Atutasan Maru,* Kobe, 17 cs.
Remington Rand, Inc., *Atutasan Maru,* Kobe, 25 cs.
Davies Turner & Co., *Aquitania,* Southampton, 1 cs.

TRACING CLOTH

M. J. Corbett & Co., *Pr. Roosevelt,* Hamburg, 18 cs.
Keuffel & Esser Co., *American Shipper,* Manchester, 12 cs.
Keuffel & Esser Co., *Scythia,* Liverpool, 14 cs.

WRITING PAPER

J. F. Auer, *Pr. Roosevelt,* Havre, 2 cs.
——, *Pr. Roosevelt,* Havre, 4 cs.

CELLULOSE PAPER

——, *Noordam,* Rotterdam, 3 cs.

STENCIL PAPER

American Express Co., *Alex van Opstal,* Antwerp, 2 cs.
——, *American Trader,* London, 2 cs.

MISCELLANEOUS PAPER

Japan Paper Co., *Gertrude Maersk,* Kobe, 22 cs.
Remington Rand, Inc., *Gertrude Maersk,* Kobe, 6 cs.
Polychrome Co., *Atutasan Maru,* Yokohama, 6 cs.
Globe Shipping Co., *Normandie,* Havre, 7 cs.
H. W. Robinson & Co., *Normandie,* Havre, 20 cs.

RAGS, BAGGINGS, ETC.

Darmstadt Scott & Courtney, *Black Falcon,* Rotterdam, 148 bls. bagging.
G. W. Millar & Co., Inc., *Black Falcon,* Rotterdam, 68 bls. bagging.
——, *Mexico,* Havana, 49 bls. rags.
Brandwein Mazur & Co., *Gertrude Maersk,* Shanghai, 100 bls. pickers.
O'Brien Padawer Co., *Gertrude Maersk,* Shanghai, 100 bls. pickers.
Bank of The Manhattan Co., *Pr. Hayes,* Bombay, 100 bls. cotton waste.
Irving Trust Co., *Pr. Hayes,* Bombay, 100 bls. cotton waste.
——, *Scythia,* Liverpool, 109 bls. rags, 26 bls., threadwaste, 20 bls. scrap cloth.
Public National Bank Trust Co., *American Trader,* London, 4 bls. rags.
Irving Trust Co., *Excambion,* Alexandria, 68 bls. rags, 63 bls. bagging.
——, *Excambion,* Alexandria, 220 bls. rags, 61 bls. bagging.
Castle & Overton, Inc., *Excambion,* Alexandria, 41 bls. rags, 132 bls. bagging.
R. Blank, *Excambion,* Alexandria, 188 bls. rags, 137 bls. old cottons.
D. Benedetto, Inc., *Excambion,* Alexandria, 136 bls. rags, 46 bls. bagging.

R. & V. Miller, Inc., *Black Osprey*, 2 bls. bagging.
Chase National Bank, *Pipestone County*, Bordeaux, 54 bls. rags.
The Barrett Co., *Pipestone County*, Havre, 100 bls. rags.
R. & V. Miller, Inc., *Svaneholm*, Gothenburg, 19 bls. rags.

HIDE CUTTINGS

——, *Scythia*, Liverpool, 380 bags.

CHINA CLAY

Whitaker Clark & Daniels, Inc., *Noordam*, Rotterdam, 578 bags.

WOOD PULP

Chase National Bank, *Alex van Opstal*, Antwerp, 36 bls. wood pulp.
——, *Fernglen*, Constanza, 3,400 bls. wood pulp, 680 tons.
——, *Grete Thorden*, Iggesund, 5,550 bls. sulphate.
Absorbo Beer Pad Co., *Vulcania*, Trieste, 536 bls. wood pulp.
M. Sone, *Manhattan*, Hamburg, 650 bls. wood pulp, 100 tons.
Castle & Overton, Inc., *Svaneholm*, Kotka, 861 bls. unbleached wood pulp, 1,065 bls. bleached wood pulp.
Pulp Sales Corp., *Svaneholm*, Kotka, 762 bls. wet sulphite.
Pulp Specialties, Inc., *Svaneholm*, Gothenburg, 325 bls. sulphate.
Perkins Goodwin & Co., *Svaneholm*, Gothenburg, 280 bls. sulphate.

WOOD PULP BOARDS

——, *Svaneholm*, Kotka, 226 rolls.
H. Fuchs & Son, *Svaneholm*, Gothenburg, 14 crates.
Darcy Export Co., *Svaneholm*, Gothenburg, 21 bls.

ALBANY IMPORTS

WEEK ENDING APRIL 1, 1939

——, *Spidola*, Tallin, 5,000 bls. wood pulp, 1,017 tons.

BOSTON IMPORTS

WEEK ENDING APRIL 1, 1939

Atkinson Haserick & Co., *Excambion*, Genoa, 3 cs. paper.
Brown Bros., Harriman & Co., *Black Osprey*, Rotterdam, 38 coils old rope.
D. C. Andrews & Co., *Black Osprey*, Antwerp, 17 bls. cotton waste.
——, *Black Osprey*, Antwerp, 46 bls. cotton waste, 145 bls. rags.
Elliott Addressing Machine Co., *Kinka Maru*, Yokohama, 13 cs. paper.

PHILADELPHIA IMPORTS

WEEK ENDING APRIL 1, 1939

Gottesman & Co., Inc., *Scanpenn*, Stockholm, 1,000 bls. sulphite, 101 tons.
——, *Fernglen*, Constanza, 3,300 bls. wood pulp, 660 tons.
E. J. Keller Co., Inc., *Pipestone County*, ——, 137 bls. rags.
Philadelphia National Bank, *Pipestone County*, St. Nazaire, 91 bls. rags.
Castle & Overton, Inc., *Svaneholm*, Kotka, 1,530 bls. unbleached wood pulp.
Pulp Sales Corp., *Svaneholm*, Kotka, 1,778 bls. wet sulphite.
Wilkinson Bros., & Co., Inc., *Svaneholm*, Kotka, 144 rolls newsprint.
J. W. Hampton, Jr. & Co., *Svaneholm*, Kotka, 90 rolls newsprint.
The Borregaard Co., Inc., *Svaneholm*, Gothenburg, 293 rolls, 34 bls. paper.
Perkins Goodwin & Co., *Svaneholm*, Gothenburg, 787 bls. sulphate.

BALTIMORE IMPORTS

WEEK ENDING APRIL 1, 1939

Gottesman & Co., Inc., *Svaneholm*, Gothenburg, 210 bls. wood pulp.
——, *Atlanta*, Trieste, 1,041 bls. wood pulp.
Castle & Overton, Inc., *Black Falcon*, Rotterdam, 250 bls. wood pulp, 50 tons.
Gongoleum Nairn Co., *Black Falcon*, Rotterdam, 248 bls. rags.
——, *Fernglen*, Constanza, 3,300 bls. wood pulp, 660 tons.
——, *Grete Thorden*, Iggesund, 400 bls. sulphite, 4,800 bls. sulphate.
Congoleum Nairn Co., *Pipestone County*, St. Nazaire, 65 bls. rags.
Congoleum Nairn Co., *Pipestone County*, Havre, 1,359 bls. rags.
Congoleum Nairn Co., *Pipestone County*, Bordeaux, 700 bls. rags.
Jay Madden Corp., *Svaneholm*, Kotka, 660 rolls newsprint.
Pulp Sales Corp., *Svaneholm*, Kotka, 745 bls. sulphate, 187 bls. wood pulp, 2,450 bls. sulphite.
Nolan Bowmall & Co., Inc., *Svaneholm*, Gothenburg, 249 rolls newsprint.
The Borregaard Co., Inc., *Svaneholm*, Gothenburg, 370 bls. wood pulp.
M. Sone, *Svaneholm*, Gothenburg, 550 bls. wood pulp.
Perkins Goodwin & Co., *Svaneholm*, Gothenburg, 269 bls. sulphate.
——, *Svaneholm*, Gothenburg, 752 bdls., 17 cs. wall board.
Bulkley Dunton Pulp Co., *Svaneholm*, ——, 178 bls. sulphate.
M. Sone, *Lehigh*, Hamburg, 525 bls. wood pulp.

NORFOLK IMPORTS

WEEK ENDING APRIL 1, 1939

R. J. Reynolds Tobacco Co., *Pipestone County*, St. Nazaire, 2,322 cs. cigarette paper.
Champagne Paper Corp., *Pipestone County*, Havre, 150 cs. cigarette paper.
H. H. Strauss, *Pipestone County*, Bordeaux, 198 cs. cigarette paper.

NEWPORT NEWS IMPORTS

WEEK ENDING APRIL 1, 1939

R. Blank, *Alioth*, Antwerp, 89 bls. rags.
Flintkote Co., *Alioth*, Antwerp, 183 bls. rags.

NEW ORLEANS IMPORTS

WEEK ENDING APRIL 1, 1939

——, *Alioth*, Antwerp, 80 bls. rags.

HOUSTON IMPORTS

WEEK ENDING APRIL 1, 1939

——, *Alioth*, Antwerp, 154 bls. rags.

Reserve Reports Higher Paper Sales

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., April 3, 1939—A recent report issued by the seventh federal reserve district on wholesale trade in the district in February, 1939, shows that "paper and its products"—as the report is designated—experienced a 4.9 per cent increase in net sales over February of one year ago and an 8.4 per cent decrease in stocks. Accounts outstanding were up 4.7 per cent while collections were 5 per cent improved over February of one year ago.

With reference to employment and earnings for the paper and printing industry in the States of Wisconsin, Michigan, Indiana, Illinois and Iowa, figures for the week of February 15, 1939 as compared to January 15, 1939, show the 735 reporting firms with 75,864 wage earners and earnings of $2,158,000. Wage earners declined 0.3 per cent during the period of comparison while earnings declined 0.9 per cent. The total for the manufacturing groups represented a 1 per cent increase in both wage earners and earnings, reflecting a slight slump in the paper and printing industry during the period.

Dixie Tag Co. Expands

The Dixie Tag and Envelope Company, which established a plant in Charlotte, N. C., some months ago, has enlarged its shops, purchased more than $30,000 worth of machinery and has incorporated. Allen T. Folk, formerly of St. Louis, designer of tag and envelope machines, is president. John Jacob Binder, of Charlotte, is secretary and treasurer.

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, April 5, 1939.

Little change in the wholesale paper market for the current week has been reported by manufacturers' representatives, jobbers, and general paper merchants. The market continues firm and the prevailing opinion in the trade continues optimistic, despite the war hysteria which is given such prominence in Europe. Sales volume in some grades of paper is reported as higher during the last two weeks and in general, volume is well above that of last Spring. The trend of production and orders in the paper industry is upward and is now considerably larger in volume than in many other types of consumers goods. All basic factors are favorable and the outlook warrants the expectation of steadily improving trade.

The index of general business activity for the week ended March 25 is practically the same as for the previous week, standing at 88.6 per cent, compared with 88.7 per cent for preceding week, and compared with 80.0 per cent for the corresponding week last year. Among the eight major component industries forming this index, electric power production showed the greatest decline of 6.2 per cent, while paper production showed an increase of 1.2 per cent for the weekly period. The production ratio of 211 paper mills for the week ended March 25 was estimated at 82.8 per cent, compared with 81.6 per cent for the preceding week, and with 68.5 per cent for the corresponding period last year. Paper board production advanced to 73.0 per cent for the week of March 25, compared with 62.0 per cent for the corresponding period last year.

The newsprint market reports little change from the preceding week. Consumer demand is slowly improving but the severe decline in advertising lineage which occurred in the past is reported as slowly being regained at this date and is lagging behind trade expectations. Prices are firm and no change from the prevailing market quotations are expected in the trade.

A little improvement has been reported in a few grades of paper for the current week but, in general, sales volume continues at about the same level as for the previous week. Prices on all grades of paper are firm and since the recent upward revision in the resale prices on No. 4 sulphite bond and ledger papers, no noteworthy changes have been reported to date.

Kraft paper production and sales continue to be maintained at a high level. Increased production and sales are reported in paper board for this week. Prices on all grades of paper and paper board are firm and the business outlook is generally conceded to be more favorable than last year, if not equal to the 1937 level.

Mechanical Pulp

No important change in the market situation of mechanical pulp has been reported this week. Prices are firm and a little more activity is reported in some quarters of the trade.

Chemical Pulp

The market situation of chemical pulp is substantially the same as for the previous week. Prices remain unchanged, with the trade skeptical about the unconfirmed report of lower prices or a downward trend in market quotations at this date.

Old Rope and Bagging

The domestic old rope market continues quiet. Prices remain firm and unchanged. Demand for old bagging continues fair. Prices are firm and unchanged at prevailing market quotations.

Rags

A steady demand for a relatively limited tonnage of white domestic rags continues for the week, with little activity reported in other grades, with the major buying in No. 1 white shirt cuttings, by both domestic mills and by exporters. No important change in prices has been reported for the current week. The foreign rag market is inactive so far as paper making rags is concerned.

Old Waste Paper

The old waste paper market continues firm. No change in the prices on any grade of waste paper has been reported this week. Rumors of higher prices cannot be confirmed, but as the present trend in paper board production continues strongly upward, the pressure exerted by demand indicates the probability of higher paper stock prices.

Twine

No important change in demand or prices has been reported in the twine market this week. Prices remain firm on all grades of hard and soft fiber twines. The outlook continues favorable.

Port Huron Reports Record Sales

Edgar W. Kiefer, president of the Port Huron and Sulphite Paper Company, Port Huron, Mich., has announced that company sales in 1938 exceeded $2,000,000, largest in the company's history.

Mr. Kiefer disclosed at the annual meeting that the company is constructing a building which will double the output of the plant's wax factory and that the company has bought the Diamond Wax Paper Company of Rochester, N. Y., which the Port Huron concern will operate.

Net profits in 1938 exceeded those of 1937, but did not establish a record, he said.

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, April 5, 1939.

BLANC FIXE—Quotations on blanc fixe remain firm and conform to prevailing market levels. The pulp is quoted at from $42.50 to $45 per ton, in bulk; the powder is offered at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER—Prices on bleaching powder continue firm and unchanged at prevailing market quotations. Bleaching powder is quoted at from $2 to $2.25 per 100 pounds, in drums, at works.

CASEIN—The demand for casein is reported improved for the current week. Standard domestic casein, 20-30 mesh, is quoted at from 7½ to 8½ cents per pound; 80-100 mesh at from 8½ cents per pound; 80-100 mesh at from 8½ to 9 cents per pound. All prices in bags, car lot quantities.

CAUSTIC SODA—Quotations on caustic soda remain unchanged at prevailing market levels. Solid caustic soda is quoted at from $2.10 to $2.30 per 100 pounds; flake and ground at from $2.50 to $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—Prices on china clay continue firm and conform to prevailing market quotations. Imported clay is quoted at from $13 to $25 per ton, ship side. Domestic filler clay is offered at from $6.50 to $12 per ton; coating clay at from $11 to $22 per ton, at mines.

CHLORINE—Quotations on chlorine are firm and unchanged at prevailing market prices. Chlorine is quoted at 1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The demand for rosin is reported as moderate for the current week. "G" gum rosin is quoted at $5.60; "F" wood rosin at $4.38, per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent gum rosin size is quoted at $2.93 per 100 pounds, f.o.b., shipping point.

SALT CAKE—Quotations on salt cake continue firm and unchanged at prevailing market levels. Prices range at from $12 to $13.50 per ton; chrome salt cake at from $11 to $12 per ton, f.o.b., shipping point. Imported salt cake is offered at from $14.50 to $15 per ton, Gulf or Atlantic Seaboard, on dock.

SODA ASH—Prices on soda ash are firm and conform to prevailing market quotations. Quotations on soda ash in car lots, at works, per 100 pounds, are as follows: in bulk, $.90; in bags, $1.05; and in barrels, $1.35.

STARCH—The demand for corn starch is reported as good. Quotations are unchanged at prevailing market levels. Globe pearl is quoted at $2.50 per 100 pounds; special paper starch is offered at $2.60 per 100 pounds. All prices in bags, car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Prices on sulphate of alumina are firm and continue unchanged at prevailing market quotations. The commercial grades are quoted at $1.15; iron free at $1.30, per 100 pounds, in bags, car lot quantities, f.o.b., works.

SULPHUR—Quotations on sulphur are firm and conform to prevailing market levels. Annual contracts are quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are offered at $19 per ton.

TALC—Prices on talc are firm and continue unchanged at prevailing market quotations. Domestic talc is offered at from $15 to $18 per ton, Eastern mines. Imported talc is quoted at from $25 to $40 per ton, on dock.

Market Quotations

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	@	—
Kraft—per cwt.—Delivered Zone A			
No. 1 Northern	$4.75	@	$5.25
Superstandard	4.12½	@	4.62½
Northern Standard Wrapping	4.00	@	—
Standard Wrapping	3.50	@	—
Tissues—Per Ream—Carlots			
White No. 1	.92½	@	—
White No. 1 M. G.	.90	@	—
White No. 1½	.67½	@	—
White No. 2	.60	@	—
Anti-Tarnish M. G.	.75	@	—
Colored	.87½	@	—
Kraft	.75	@	—
Manila	.60	@	—
Unbl. Toilet, 1 M.	3.20	@	—
Bleached Toilet	5.26	@	—
Paper Towels—			
Unbleached	1.80	@	—
Bleached	2.10	@	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	8.25	@	9.75
No. 2 Jute	7.50	@	9.00
No. 1 Manila Wrapping, 35 lb.	5.00	@	—
No. 2 Manila Wrapping, 35 lb.	4.75	@	—
Boards, per ton—			
News	30.00	@	32.50
Chip	30.00	@	32.50
Sgl. Mla. Lt. Chip	42.50	@	—
Jute Lined Chip	42.50	@	45.00
White Pat. Coated	55.00	@	57.50
Kraft Liners	45.00	@	—
Binders Boards	71.00	@	77.00

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
100% Rag Ext. No. 1	$39.10	@ $46.00	$40.25	@ $47.25
100% Rag	31.05	@ 36.50	32.20	@ 37.75
85% Rag	.....		29.90	@ 35.00
75% Rag	23.60	@ 27.75	24.75	@ 29.00
65% Rag	.....		21.65	@ 26.25
50% Rag	17.55	@ 21.50	18.70	@ 22.75
25% Rag	14.65	@ 17.75	15.80	@ 19.25

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
No. 1	$8.60	@ $10.50	$9.75	@ $12.00
No. 2	7.70	@ 9.50	8.90	@ 10.75
No. 3	6.85	@ 8.25	8.00	@ 9.75
No. 4	7.00	@ 8.50	8.20	@ 10.00

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper, Delivered in Zone 1:

No. 1 Glossy Coated	$11.30	@	$12.75
No. 2 Glossy Coated	9.70	@	11.00
No. 3 Glossy Coated	8.60	@	10.00
No. 4 Glossy Coated	8.05	@	9.25
No. 1 Antique (watermarked)	8.05	@	9.25
No. 2 Offset	7.45	@	8.50
A Grade E. F.	7.20	@	8.25
A Grade S. & S. C.	7.45	@	8.50
B Grade E. F.	6.65	@	7.75
B Grade S. & S. C.	6.90	@	8.00
C Grade E. F.	6.40	@	7.50
C Grade S. & S. C.	6.65	@	7.75
D Grade E. F.	6.10	@	7.00
D Grade S. & S. C.	6.35	@	7.25

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	25.00	@	26.00
Dry	25.00	@	28.00
(Delivered)			
No. 1 Domestic and Canadian	29.00	@	32.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	2.25	@	2.75
Prime Qualities—			
Easy-Bleaching Sulphite	1.90	@	2.00
Strong Unbleached Sulphite	1.80	@	1.95
(On Dock, Atlantic Ports)			
Kraft Bleached	2.50	@	2.75
Kraft Light & Strong	1.60	@	1.75
Kraft No. 1	1.45	@	1.60
Kraft No. 2	1.35	@	1.40
(F. o. b. Pulp Mill)			
Kraft Domestic	1.25	@	1.75
(Delivered)			
Soda Bleached	2.55	@	—

Add 60 cents per short ton, dock charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	6.75	@	7.00
Silesias No. 1	4.00	@	4.25
New Unbleached	6.50	@	6.75
Blue Overall	4.90	@	5.00
Fancy	2.00	@	2.15
Washables	1.50	@	1.60
Mixed Khaki Cuttings	3.00	@	3.25
O. D. Khaki Cuttings	4.00	@	4.10

Old Rags

White, No. 1—			
Repacked	2.90	@	3.15
Miscellaneous	2.10	@	2.25
White, No. 2—			
Repacked	1.50	@	1.60
Miscellaneous	1.25	@	1.40
Thirds and Blues—			
Repacked	1.30	@	1.40
Miscellaneous	1.15	@	1.20
Roofing Rags—			
No. 1	1.05	@	1.10
No. 2	.75	@	.80
No. 3 (bagging)	.55	@	.65
No. 4	.60	@	.65
No. 5A	.60	@	.65

Foreign Rags

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	@	2.20
New Light Silesias	5.50	@	5.75
Light Flannelettes	5.50	@	5.75
New White Cuttings	7.00	@	7.50
New Light Oxford	4.00	@	4.50
New Light Prints	3.00	@	3.25

Old Rags

No. 1 White Linens	7.50	@	8.50
No. 2 White Linens	6.50	@	7.50
No. 3 White Linens	4.50	@	—

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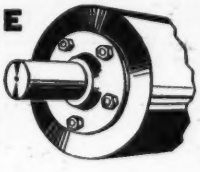

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No. 2 White Cotton.	3.25	@	3.75
No. 3 White Cotton.	2.50	@	3.00
No. 4 White Cotton.	1.90	@	2.20
Extra Light Prints..	2.00	@	2.40
Ord. Light Prints...	1.75	@	2.15
Med. Light Prints...	1.55	@	1.95
Dutch Blue Cottons.	2.25	@	2.50
French Blue Linens..	3.00	@	—
Checks and Blues...	2.00	@	—
Linsey Garments....	1.90	@	2.00
Dark Cottons.....	1.50	@	1.60
Old Shopperies.....	1.30	@	1.45
New Shopperies.....	1.45	@	1.50
French Blues.....	2.25	@	2.50

Old Rope and Bagging

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	1.75	@	1.90
Domestic	1.70	@	1.80
Wool Tares, light....	1.60	@	1.70
Wool Tares, heavy...	1.80	@	1.90
Bright Bagging.....	1.60	@	1.70
Manila Rope—			
Foreign	2.60	@	2.75
Domestic	2.00	@	3.00
Jute Threads.....	2.75	@	3.00
Sisal Strings.....	1.50	@	1.60
Mixed Strings.....	.55	@	.60

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	2.30	@	2.40
Ordinary Hard White No. 1....	1.90	@	2.00
Soft White No. 1..	1.60	@	1.75
Soft White Extra..	2.25	@	2.40
Flat Stock—			
Stitchless	.80	@	.85
Overissue Mag.....	.70	@	.75
Solid Flat Book....	.55	@	.60
Crumbled No. 1...	.40	@	.45
Ledger Stock White.	1.10	@	1.20
Ledger Stock Colored	.60	@	.70
New B. B. Chips....	.15	@	.20
Manila—			
New Env. Cut.....	1.40	@	1.50
New Cuttings.....	1.00	@	1.20
Old Kraft Machine—			
Compressed bales..	.65	@	.70
News—			
No. 1 White News	1.25	@	1.30
Strictly Overissue..	.40	@	.45
Strictly Folded....	.37½	@	.42½
No. 1 Mixed Paper..	.17½	@	.22½

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.12¾	@	.14¼
White Hemp.....	.13¾	@	.15¼
Fine Polished—			
Fine India.....	.16	@	.18
Unpolished—			
Box	.09½	@	—
Paper Makers.....	.09½	@	.10½
Tube Rope.....	.10¾	@	.12½
Wall Paper.....	.10¾	@	.12½
Wrapping	—	@	—
Soft Fiber Rope...	.12	@	.14
Cotton	.17	@	.20

(Hard Fiber)

Medium Java.....	.11	@	.17
Mex. Sisal.....	.10	@	.16
Manila	.16	@	.23

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1.	.06½	@	.07
New White, No. 2.	.03½	@	.04
Light Silesias.....	.03½	@	.04
Silesias, No. 1....	—	@	.04½
Black Silesias, soft	—	@	.03
New Unbleached..	.05½	@	.06
Washable, No. 1..	.01½	@	.01¾
Blue Overall.....	.04	@	.04½
Cottons—Acording to grades—			
Washable No. 2...	.01	@	.01¾
New Blue.....	.01	@	.01¾
Fancy Percales....	—	@	.02½
New Black Soft...	.03	@	.03½
New Light Seconds	—	@	.04½
New Dark Seconds	.50	@	.75
Khaki Cuttings—			
No. 1 O. D.....	.03	@	.03½
No. 2 Mixed.....	.02	@	.02½
Corduroy	—	@	.02
New Canvas.....	.05	@	.05½
New Black Mixed.	.02½	@	.02¾

Domestic Rags (Old)

White No. 1—			
Repacked	3.00	@	3.25
Miscellaneous	2.50	@	2.75
Thirds and Blues—			
Miscellaneous	1.00	@	1.25
Repacked	1.50	@	1.75
Black Stockings (Export)	3.00	@	3.50
Roofing Stock—			
Foreign No. 1....	—	@	1.10
Domestic No. 1...	—	@	1.05
Domestic No. 2...	—	@	.85
Roofing Bagging..	—	@	.75

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.75	@	2.00
Domestic	1.50	@	1.75
Manila Rope.....	—	@	3.50
Sisal Rope.....	1.50	@	1.75
Mixed Rope.....	.75	@	1.00
Scrap—			
No. 1.....	—	@	1.75
No. 2.....	.95	@	1.00
Wool Tares, heavy..	3.25	@	3.50
Mixed Strings.....	.75	@	1.00
No. 1 New Light Burlap	2.50	@	3.00
New Burlap Cuttings	1.75	@	2.00

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White.	2.25	@	2.30
No. 2 Hard White.	1.90	@	2.00
No. 1 Soft White..	1.75	@	1.80
No. 2 Soft White..	1.30	@	1.40
No. 1 Mixed.....	.65	@	.75
Solid Ledger Stock..	1.45	@	1.50
Ledger Stock, white.	1.15	@	1.20
Ledger Stock, colored	.75	@	.80
No. 1 Books, heavy..	.60	@	.75
Manila Cuttings.....	1.45	@	1.50
Print Manila.....	.45	@	.50
Container Manila....	.35	@	.40
Kraft Paper.....	.75	@	.80
No. 1 Mixed Paper..	.22½	@	.27½
Straw Board Chip...	.25	@	.30
Binders Board Chip.	.25	@	.30
Corrugated Board...	.50	@	.55
Overissue News.....	.40	@	.45
Old Newspapers.....	.35	@	.40

BOSTON

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.25	@	2.50
No. 1 Soft White..	1.85	@	2.15
No. 2 Mixed.....	.75	@	.80
Solid Ledger Books..	1.30	@	—
Overissue Ledger Stock	1.30	@	1.50
Mixed Ledgers.....	.85	@	.90
No. 1 Books, heavy..	.65	@	.75
No. 1 Books, light...	.65	@	.75
Crumpled Stitchless Book Stock.....	.55	@	.65
Manila Env. Cuttings	1.70	@	1.85
Manila Envelope Cuttings, Extra Quality	2.00	@	2.10
No. 1 Old Manila...	.65	@	.65
No. 1 Old Manila...	.80	@	.90
White Blank News..	1.30	@	1.40
No. 1 Kraft.....	.80	@	.90
Mixed Papers.....	.15	@	.17½
Print Manila.....	.45	@	.55
Container Manilas...	.27½	@	—
Old Newspapers	.30	@	.37½
Paper Wool Strings..	.50	@	.65
Overissue News.....	.45	@	.50
Box Board Chips....	.20	@	.25
Corrugated Boxes....	.35	@	.42½
Kraft corrugated boxes	.70	@	.75
Screening Wrappers..	.40	@	.45

Bagging

(F o. b. Boston)

Manila Rope—			
Foreign	2.65	@	2.75
Domestic	2.65	@	2.75
Sisal Rope.....	1.75	@	1.85
Mixed Rope.....	.50	@	.60
Transmission Rope....	1.90	@	2.00
Soft Jute Rope.....	2.00	@	2.25
Jute Carpet Threads.	.75	@	.90
Gunny Bagging—			
Foreign	1.65	@	—
Domestic	1.50	@	1.60
Bleachery Burlap...	2.50	@	3.00
Scrap Burlap—			
Foreign	1.55	@	1.65
Domestic	1.40	@	1.50
Scrap Sisal.....	1.75	@	1.80
Scrap Sisal for Shredding	1.80	@	2.10
Wool Tares, Heavy..	1.50	@	1.60
New Burlap Cuttings	2.75	@	2.90
Aust. Wool Pouches.	2.50	@	2.75
Heavy baling bagging	1.60	@	1.75
Paper Mill Bagging..	1.00	@	1.15
No. 2 Bagging.....	.45	@	.60

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints...	.03¼	@	.03½
New White No. 1...	.06¾	@	.07
New Light Flannelettes	.04¾	@	—
Silesias No. 1.....	.04¾	@	—
New Black Silesias..	.03¾	@	.04
Soft Unbleached.....	6.50	@	7.00
Blue Cheviots.....	.05	@	.05¾
Fancy	.03	@	.03¾
Washable	.02¾	@	.03
Cottons—According to grades—			
Blue Overalls.....	.04¾	@	.05
New Black, soft...	.03¾	@	.04
Khaki Cuttings.....	.03	@	.03½
O. D. Khaki.....	.04	@	—
Corduroy	.02¾	@	.03
New Canvas.....	.06¾	@	.07¼
B. V. D. Cuttings...	.06¾	@	—

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	—	@	2.75
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous	2.00	@	2.25
Twos and Blues.....	1.75	@	2.00
Old Blue Overalls...	1.50	@	—
Thirds and Blues—			
Repacked	1.37½	@	1.75
Miscellaneous	1.25	@	1.62½
Black Stockings.....	3.90	@	4.00
Roofing Stock—			
No. 1.....	1.00	@	1.10
No. 2.....	.75	@	.85
No. 3.....	.65	@	.70

Foreign Rags

(F. o. b. Boston)

Dark Cottons.....	.95	@	1.05
Dutch Blues.....	2.65	@	2.75
New Checks and Blues	2.85	@	3.00
Old Fustians.....	2.25	@	2.50
Old Linsey Garments	2.20	@	2.25
New Silesias.....	3.75	@	4.00

CHICAGO

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings....	1.80	@	1.90
No. 1 Hard White.	1.70	@	1.80
No. 1 Soft White..	1.50	@	—
Ledger & Writings..	.75	@	.80
Solid Books.....	.45	@	.50
Blanks	.90	@	—
Krafts	.45	@	.50
New Kraft Cuts.....	1.10	@	—
Manila Env. Cuts...	Nominal		
Ex. No. 1 Manila...	Nominal		
Print Manila.....	Nominal		
Overissue News.....	.35	@	—
Old Newspapers—			
No. 1 Folded News	.25	@	.30
No. 1 Mixed Paper	.15	@	.20
Roofing Stocks—			
No. 1.....	1.00	@	1.05
No. 2.....	.85	@	—

TORONTO

Paper

Bonds

Direct mill shipment in two-ton lots

No. 1 White	$35.50	@	—
No. 1 Tints	36.50	@	—
No. 2 White	25.50	@	—
No. 2 Tints	26.50	@	—
No. 2 Golden Rod..	27.50	@	—
No. 3 White	21.00	@	—
No. 4 White	15.00	@	—
No. 4 Tints	16.00	@	—
No. 4 Golden Rod..	17.00	@	—

Direct mill shipment in three-ton lots

No. 5 White	$10.50	@	—
No. 5 Tints	11.50	@	—
No. 5 Golden Rod..	12.00	@	—
No. 6 White	9.00	@	—
No. 6 Tints	9.50	@	—
No. 6 Golden Rod..	11.00	@	—
No. 7 White	8.00	@	—
No. 7 Tints	8.50	@	—
No. 7 Golden Rod..	10.00	@	—
Book—			
No. 1 M. F.	$7.00	@	—
No. 2 M. F.	6.50	@	—
No. 3 M. F.	5.35	@	—
No. 1 S. C.	7.25	@	—
No. 2 S. C.	6.75	@	—
No. 3 S. C.	5.85	@	—

Coated Book & Litho

Ton Lots (resale)

No. 1	$12.00	@	—
No. 2	10.25	@	—
No. 3	8.90	@	—
Coated tinted	13.00	@	—
Wrapping—delivered—			
Rag Brown.....	4.85	@	5.25
White Wrap.....	4.00	@	—
"B" Manila.....	4.90	@	6.15
No. 1 Manila.....	5.50	@	6.90
Fiber	5.50	@	6.90
Kraft No. 2.....	5.50	@	6.90

(F. o. b. Cars, Toronto)

News per ton—			
Rolls (contract)...	46.00	@	—
Sheets	54.00	@	—

Pulp

Ground wood.....	$29.00	@	—
Unbleached sulphite.	44.00	@	—
Bleached sulphite...	54.00	@	—
Kraft	50.00	@	—
Soda	54.00	@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut...	2.00	@	—
Soft White.....	1.75	@	—
White Blk. News..	1.25	@	1.10
Book and Ledger—			
Flat Magazine and Book Stock (old)	.70	@	—
Light and Crumpled Book Stock.	.60	@	—
Ledgers and Writings	1.00	@	—
Manilas—			
New Manila Cut..	1.35	@	—
Printed Manilas...	.45	@	—
Kraft	.95	@	—
News and Scrap—			
Strictly Overissue..	.50	@	—
Strictly Folded....	.45	@	—
No. 1 Mixed Paper..	.30	@	—

Domestic Rags

(Price to Mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.06¼	@	.06½
Light Prints.....	.02½	@	.02¾